Cateye FITNESS

Cateye Ergometer

Belt Drive, Automatic Type

Model EC-1200/EC-1600/EC-3600/EC-3700/EC-C400/EC-C400R

Service Manual

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Ver.01

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1200	1600	3600	3700	C400	C400R		
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PART C

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How to Use This Service Manual

The manual consists of Part A, Part B and Part C. Part A refers to trouble-shooting which allows you to identify the cause and areas to be fixed depending on typical symptoms.
Part B shows how to repair and/or adjust specific defects. This part consists of repair methods for electrical parts [ES] and those for mechanical parts [MS].
Part C lists up all genuine parts and corresponding part numbers that will be necessary for replacement or stock
Whenever any problem has occurred on the main unit, take the following actions to repair or adjust it.

1. Check and identify the cause by referring to Part A.
2. Identify the parts name by referring to Name of Parts.
3. Perform repair or adjustment in accordance with the instructions in Part B.
4. Replacement, if required, should be done by using genuine parts as specified in Part C.

FOR SAFE OPERATION

<Electrical danger>

- During troubleshooting, checking the wiring, measuring voltage and electric current; be careful to avoid electric shock.
- During maintenance, turn off the power unless it is required for maintenance.

<Mechanical danger>

- Be careful to avoid getting caught in rotation parts such as the gears, belts or rollers. Familiarize yourself with the movements of these parts before using the equipment.
- It is possible that certain covers, moving parts, etc., may cause injury. Make sure to hold covers, etc., securely during work.

<Important precautions>

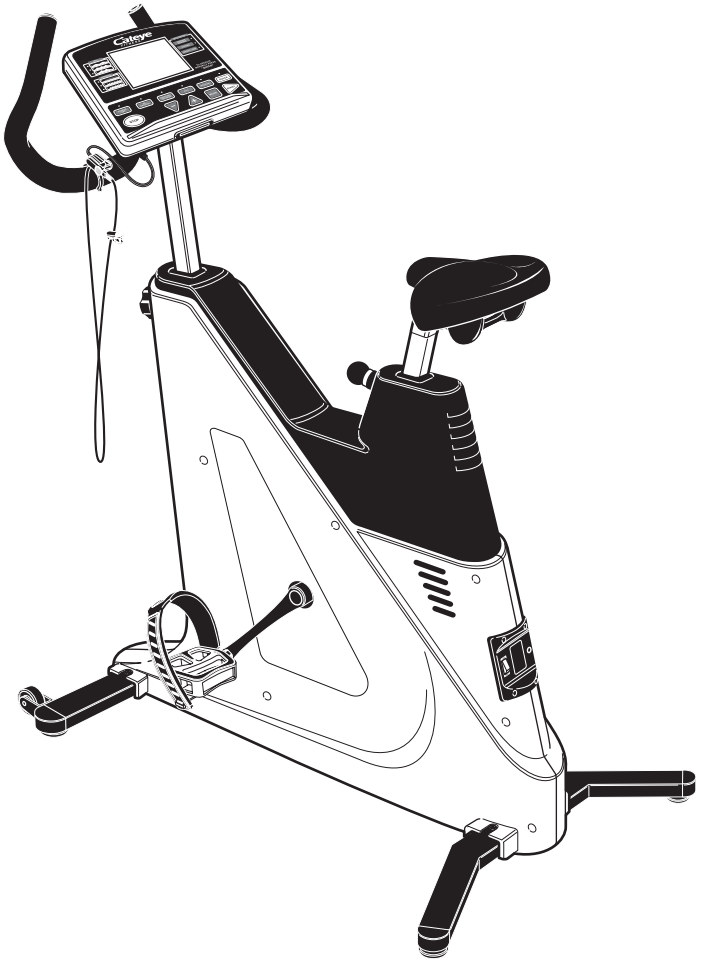
- The machine is comprised of various parts, some of which are heavy. When moving or removing such parts, be sure to hold these parts securely.
- When moving the machine, be sure that at least two persons work together.

Symbol marks used for safety precautions in this manual

Warning Failure to observe this warning could result in serious injury or death.

Caution Failure to observe this warning could result in physical injury or damage to the machine.

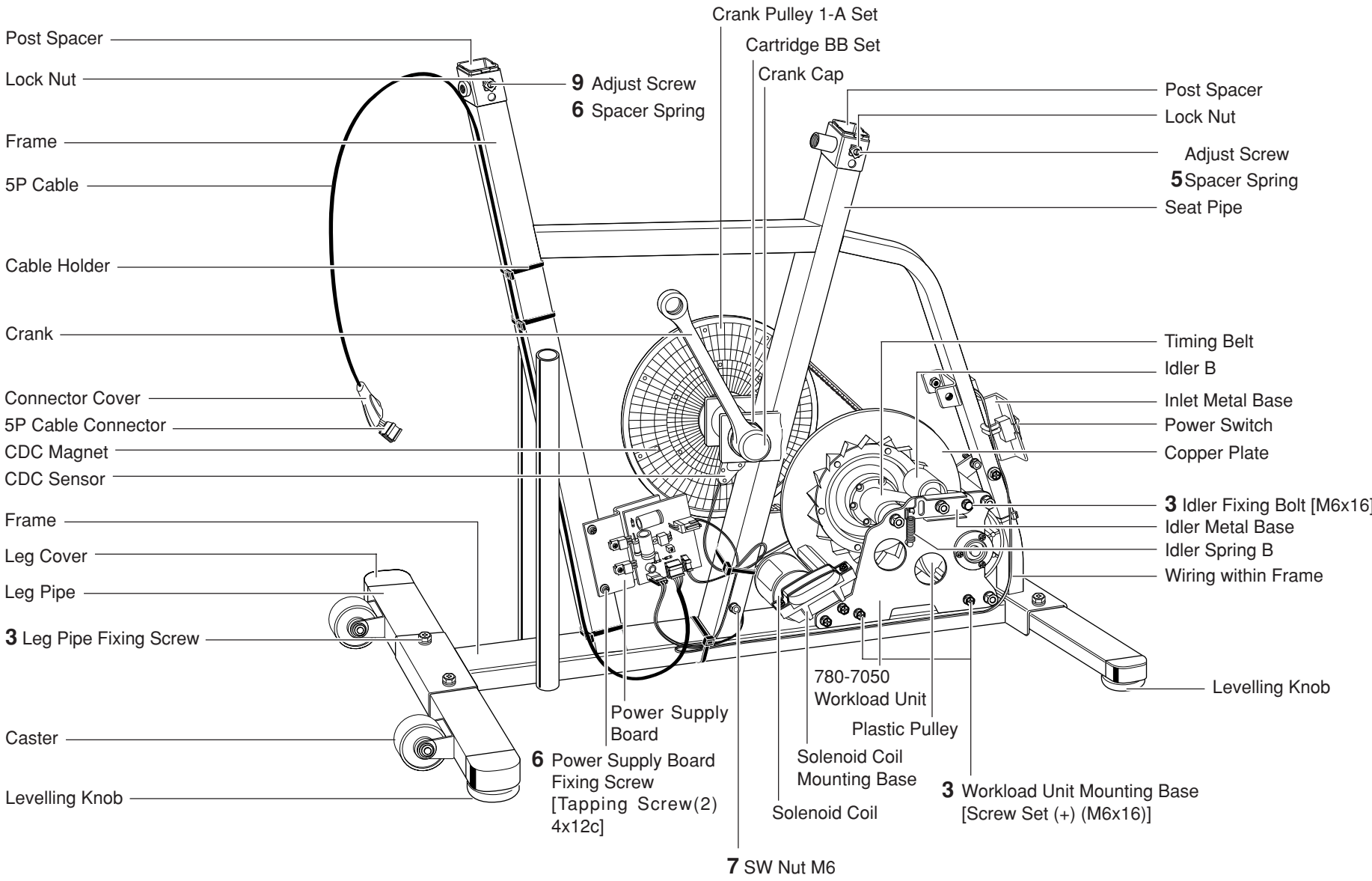
Reference This symbol mark denotes helpful information or associated items.

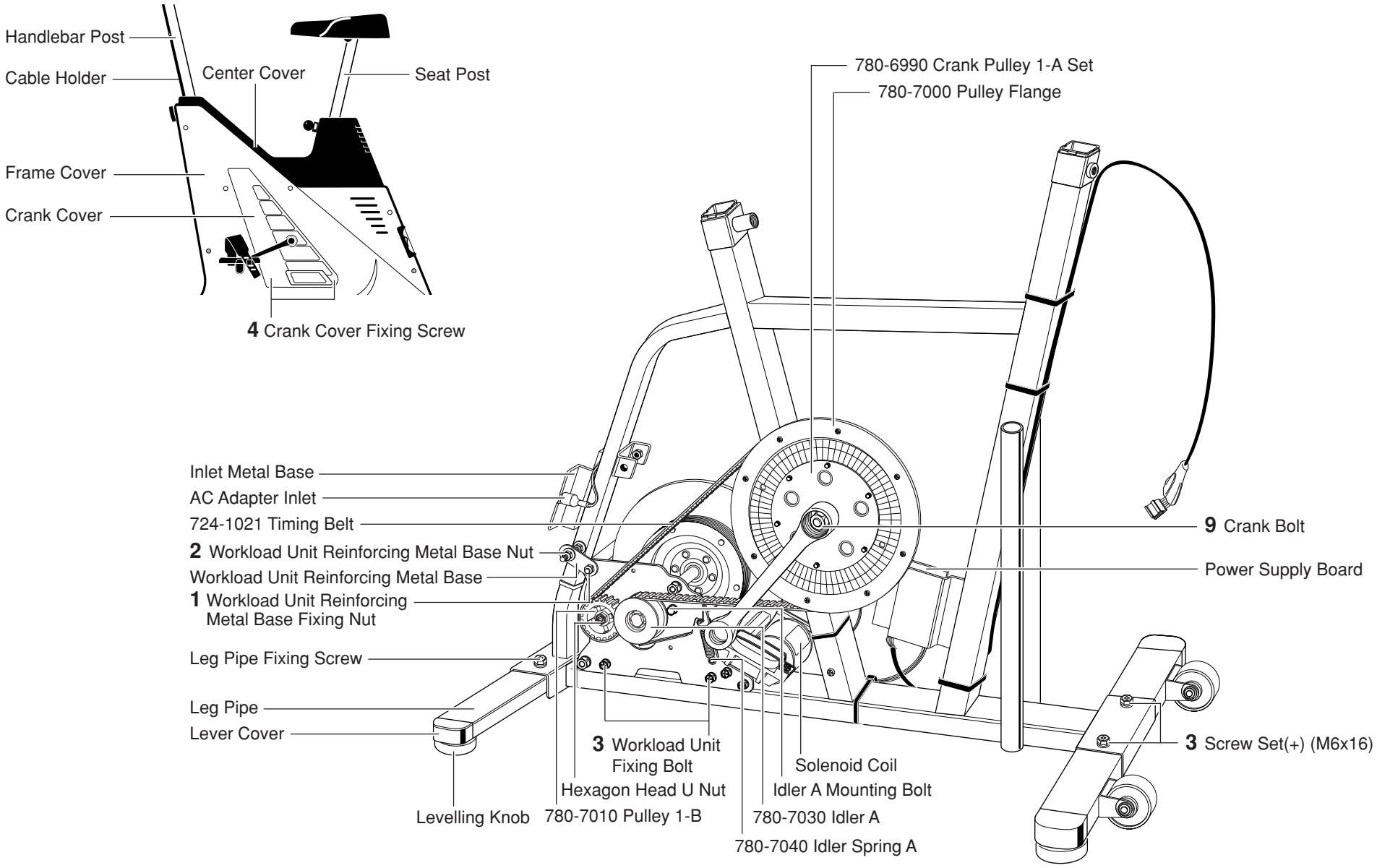


Upright Type

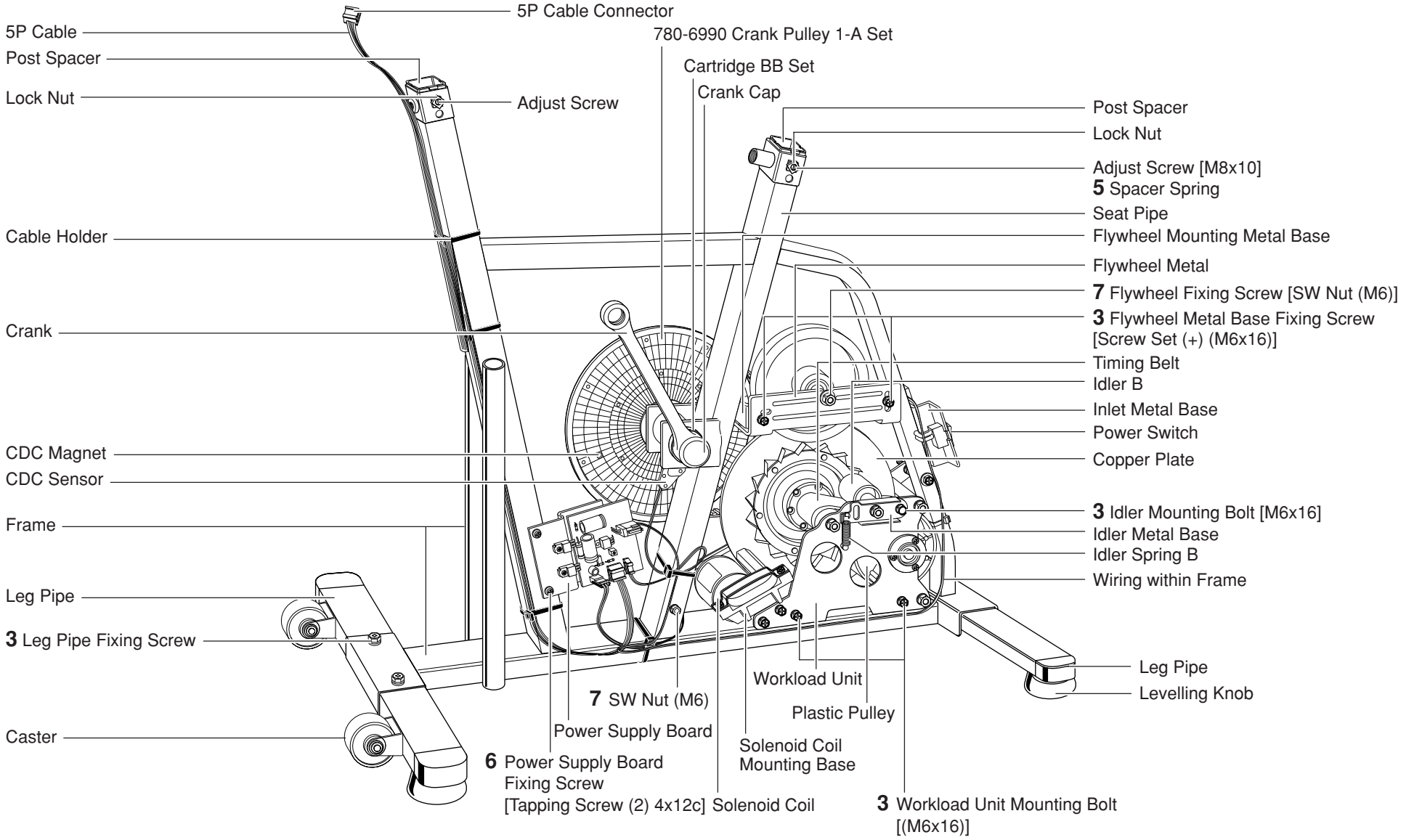
Recumbent Type

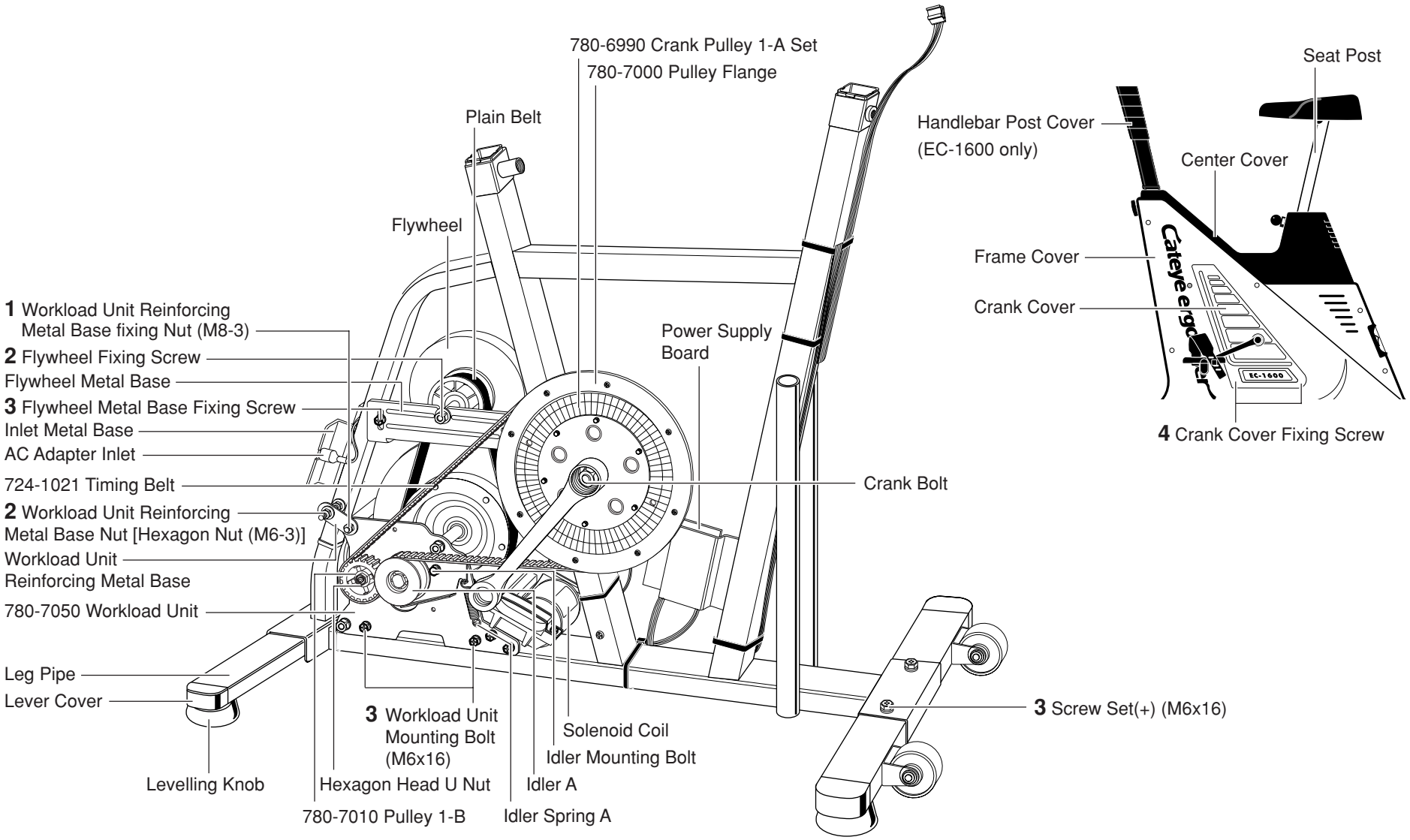
Name of Parts for Upright Type (w/o Flywheel)



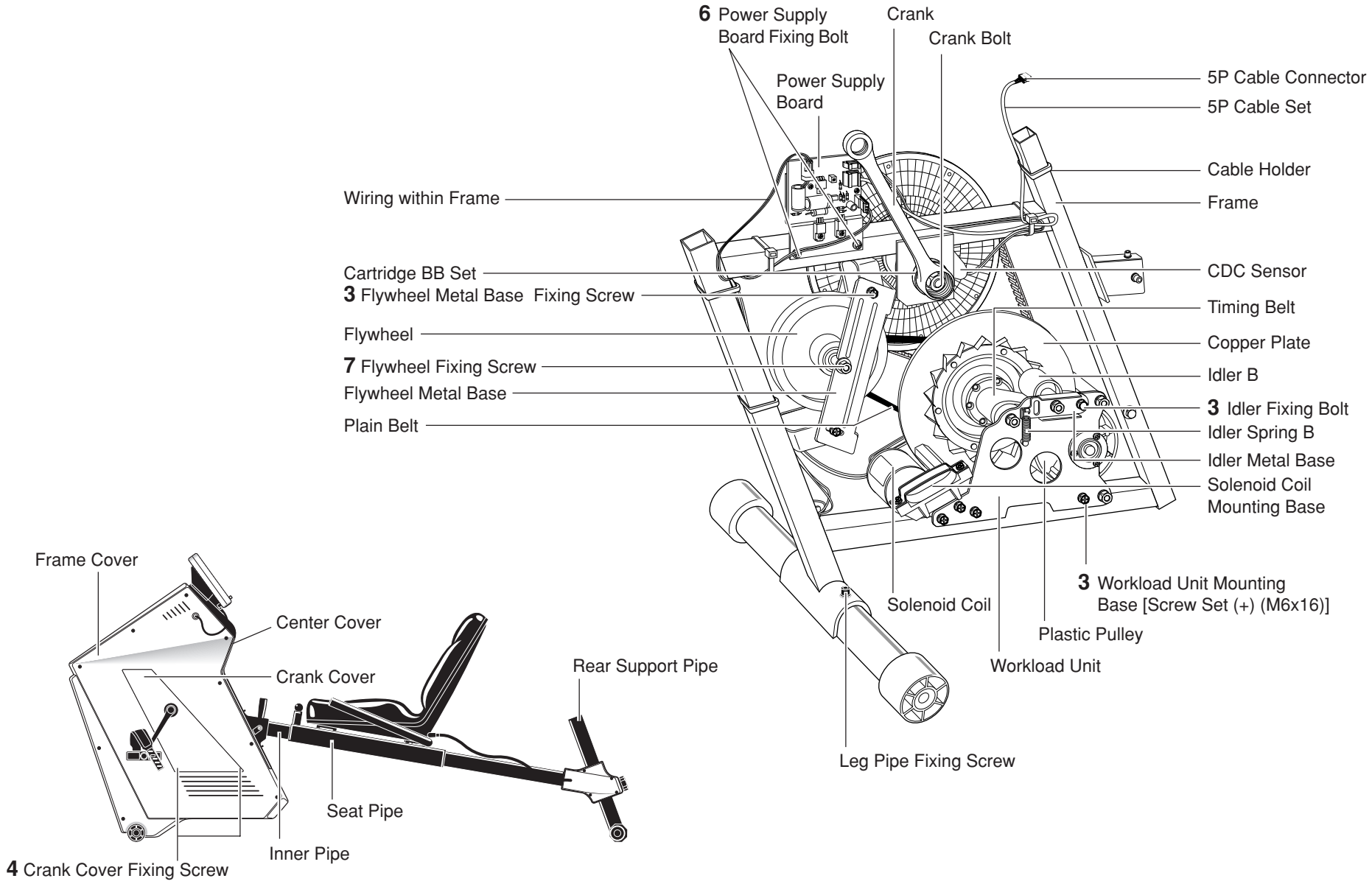

Handlebar Post
Cable Holder
Center Cover
Seat Post
Frame Cover
Crank Cover
4 Crank Cover Fixing Screw
780-6990 Crank Pulley 1-A Set
780-7000 Pulley Flange
Inlet Metal Base
AC Adapter Inlet
724-1021 Timing Belt
2 Workload Unit Reinforcing Metal Base Nut
Workload Unit Reinforcing Metal Base
1 Workload Unit Reinforcing Metal Base Fixing Nut
Leg Pipe Fixing Screw
Leg Pipe
Lever Cover
Levelling Knob
3 Workload Unit Fixing Bolt
Hexagon Head U Nut
780-7010 Pulley 1-B
780-7040 Idler Spring A
780-7030 Idler A
Solenoid Coil
Idler A Mounting Bolt
9 Crank Bolt
Power Supply Board
3 Screw Set(+) (M6x16)

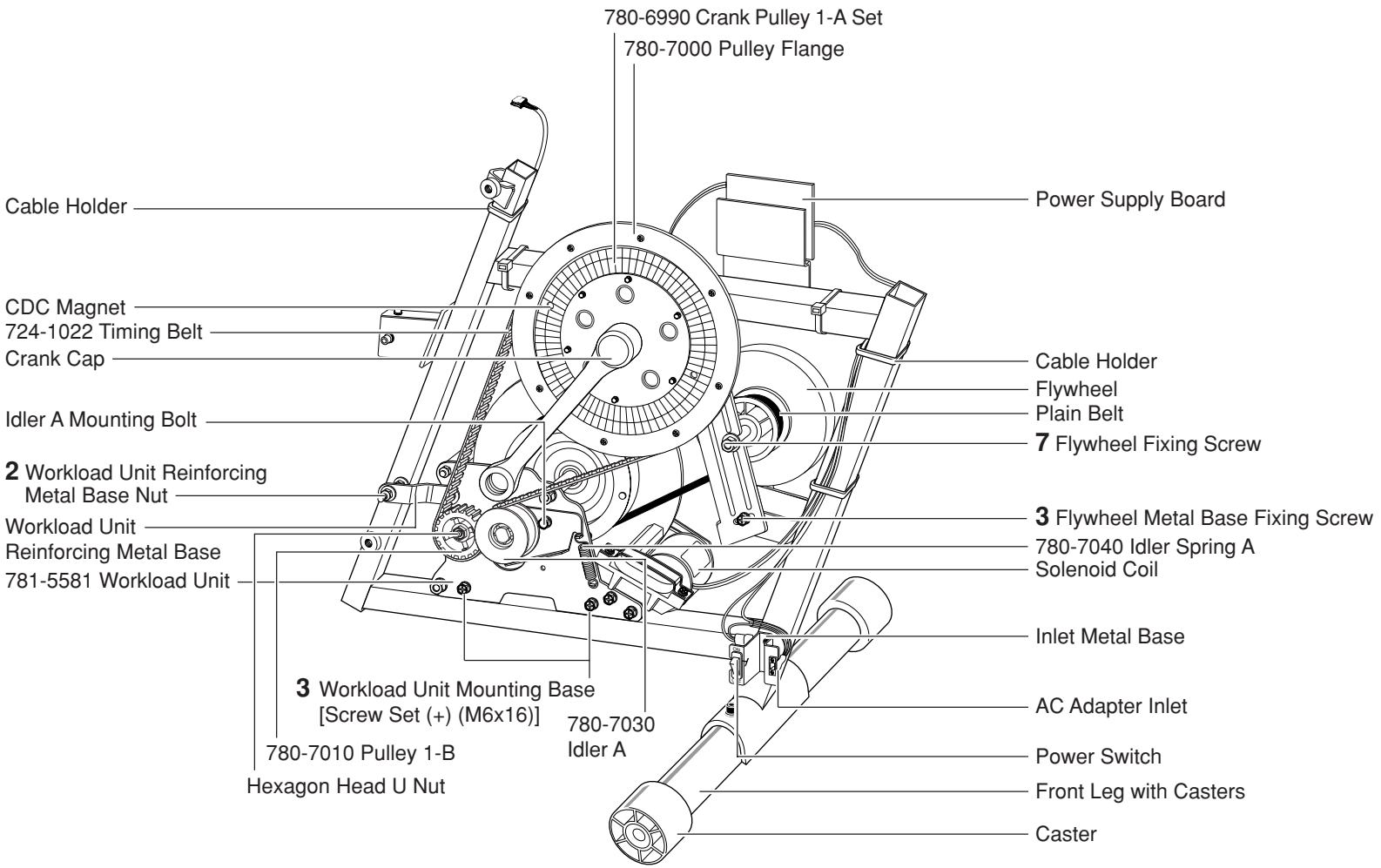
Name of Parts for Upright Type (w/ Flywheel)



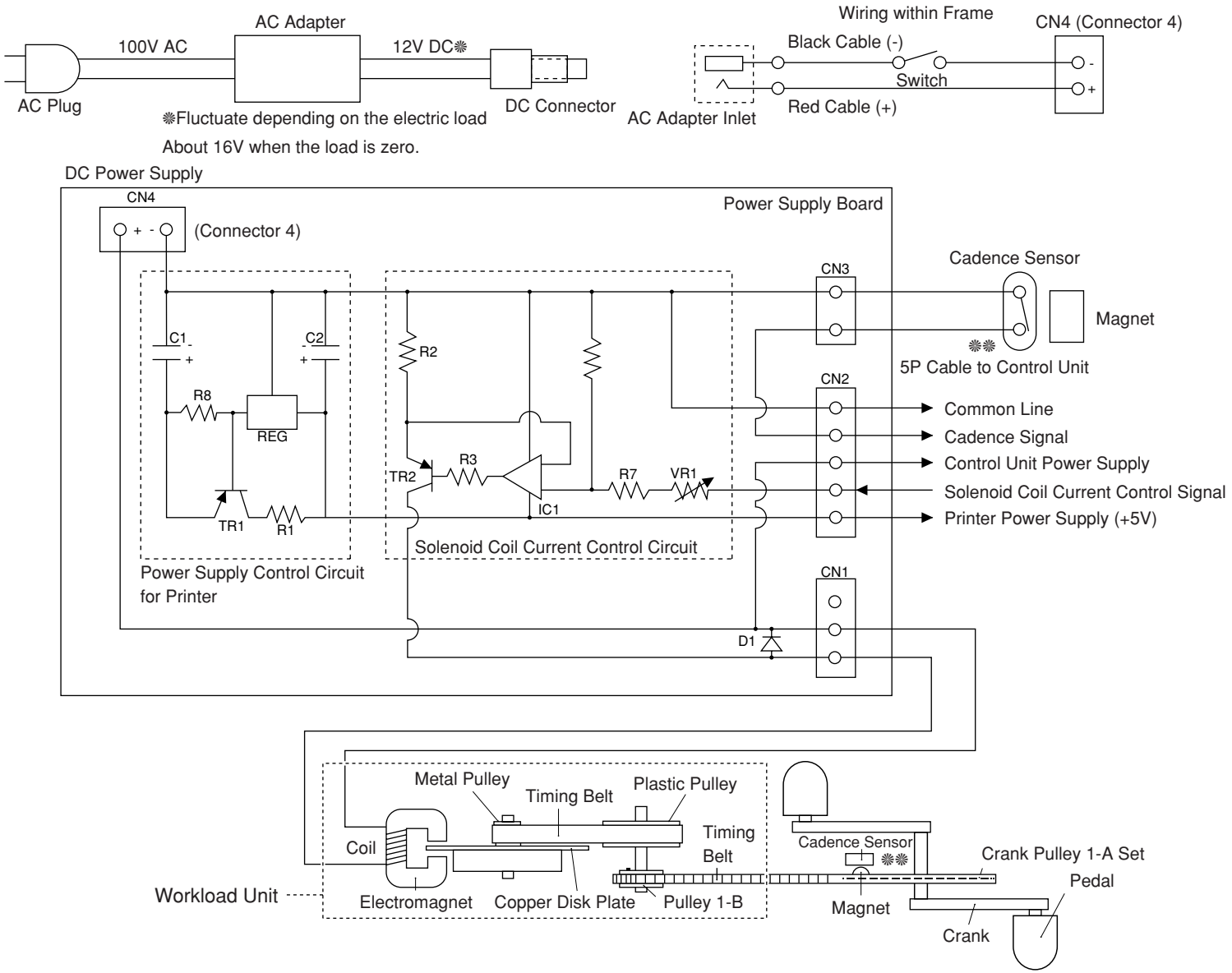

780-6990 Crank Pulley 1-A Set
780-7000 Pulley Flange
Plain Belt
Flywheel
1 Workload Unit Reinforcing Metal Base fixing Nut (M8-3)
2 Flywheel Fixing Screw
Flywheel Metal Base
3 Flywheel Metal Base Fixing Screw
Inlet Metal Base
AC Adapter Inlet
724-1021 Timing Belt
2 Workload Unit Reinforcing Metal Base Nut [Hexagon Nut (M6-3)]
Workload Unit Reinforcing Metal Base
780-7050 Workload Unit
Leg Pipe
Lever Cover
Levelling Knob
Hexagon Head U Nut
780-7010 Pulley 1-B
3 Workload Unit Mounting Bolt (M6x16)
Idler Spring A
Idler A
Solenoid Coil
Idler Mounting Bolt
Power Supply Board
Crank Bolt
3 Screw Set(+) (M6x16)
Handlebar Post Cover (EC-1600 only)
Seat Post
Center Cover
Frame Cover
Crank Cover
4 Crank Cover Fixing Screw

Name of Parts for Recumbent Type (EC-3600, EC3700 & EC-C400R)

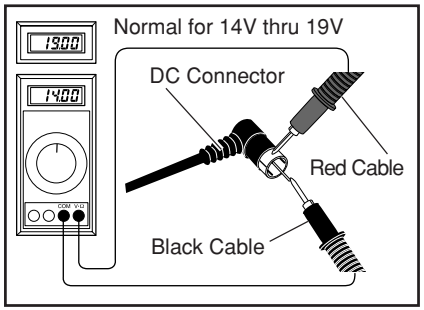



780-6990 Crank Pulley 1-A Set
780-7000 Pulley Flange
Cable Holder
Power Supply Board
CDC Magnet
724-1022 Timing Belt
Crank Cap
Cable Holder
Flywheel
Plain Belt
Idler A Mounting Bolt
7 Flywheel Fixing Screw
2 Workload Unit Reinforcing Metal Base Nut
3 Flywheel Metal Base Fixing Screw
Workload Unit
Reinforcing Metal Base
780-7040 Idler Spring A
781-5581 Workload Unit
Solenoid Coil
Inlet Metal Base
3 Workload Unit Mounting Base [Screw Set (+) (M6x16)]
780-7030 Idler A
AC Adapter Inlet
780-7010 Pulley 1-B
Power Switch
Hexagon Head U Nut
Front Leg with Casters
Caster

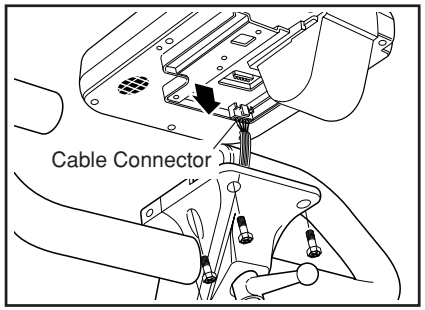
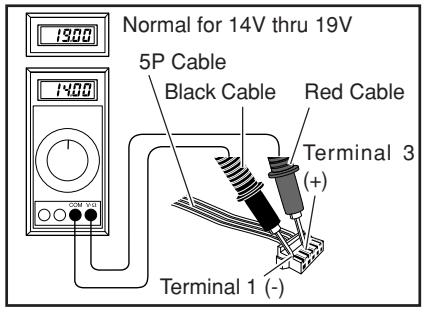
Circuit Diagram for Automatic Type Cateye Ergometer



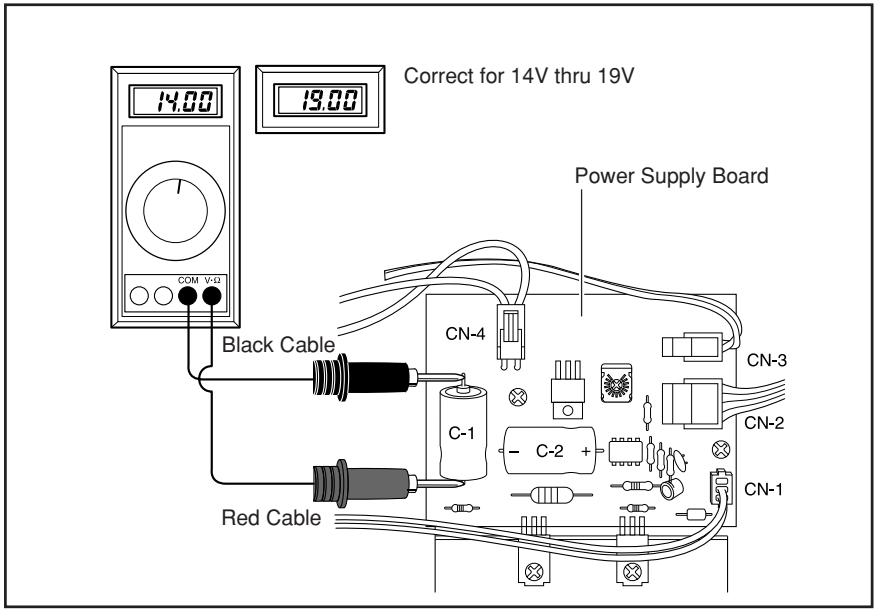
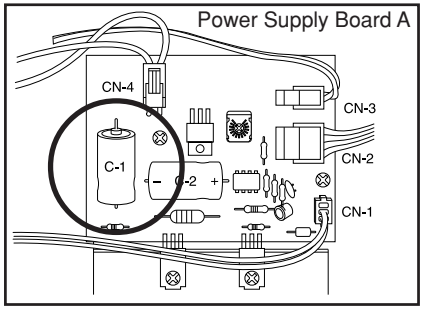
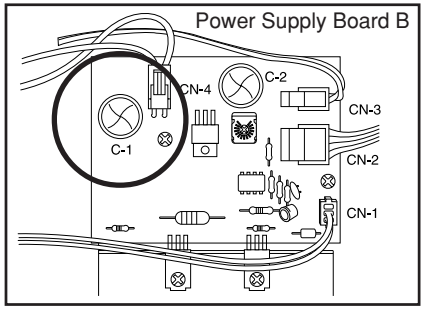
T-1 No Display on Control Unit after Power ON. (1)

Check	Maintenance	Illsutrations
Check the power is available at the wall socket before proceeding to checking of causes. [1] Checking the AC Adapter 1. Detach the plug of AC adapter from the AC adapter inlet of the main unit. 2. Connect the wall socket plug of the AC adapter to the wall socket. 3. Using a tester, measure the voltage at the plug which will be connected to the main unit. (Fig. 1) ● The AC adapter will be working fine, if the voltage is minus (-) at the inner area and plus (+) at the outer area of the connector and also the meter reading is in the range of 14V to 19V. ● When the measured voltage is 0V, or less than 14V, the AC adapter will be defective. **Caution** Never short-circuit the plug of AC adapter. This will damage the AC adapter. If the AC adapter is working normally, the system checks the items on the next page.	Replace the AC adapter.	 Fig. 1

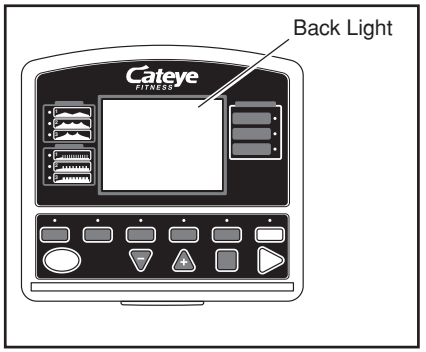
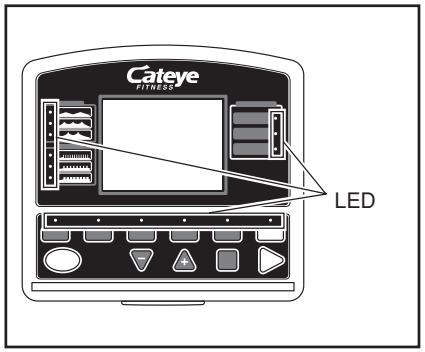
T-1 No Display on Control Unit after Power ON. (2)

Check	Maintenance	Illustrations
[2] Checking the Wiring within the Frame 1. When the AC adapter is found to be correct, proceed to checking of wiring within the frame. Loosen the four screws on the handlebar stem to remove the control unit. (Fig. 2) 2. Remove the 5P cable which is connected to the back of the control unit. (Fig. 2) 3. Connect the AC adapter, and turn on the main unit. 4. Using a tester, measure the voltage across the terminals 1 (-) and 3 (+) of the 5P cable. (Fig. 3) ● The main unit side will be working fine if the meter reading is in the range of 14V to 19V. This means the control unit will be defective.	Replace the control unit.	 Fig. 2  Fig. 3

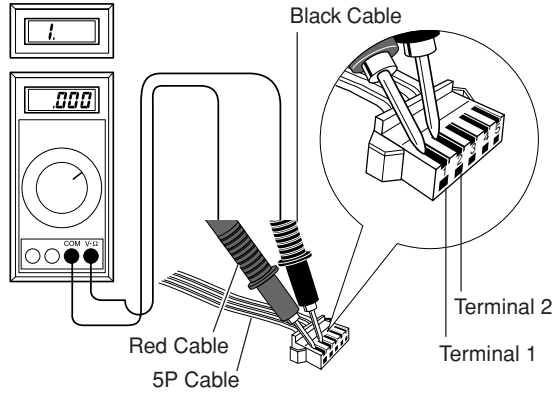
T-1 No Display on Control Unit after Power ON. (3)

Check	Maintenance	Illsutrations
[3] When the meter reading at step 2. is 0V or less than 14V, check the main unit in accordance with the following procedures: 1. Remove the frame cover. (See sections D-1 and D-2 "Removing the Frame Covers.") 2. With the control unit removed, connect the AC adapter, and turn on the power switch. Measure the voltage across the electrolytic capacitor C1 on the power supply board (25V 1000μV). (Fig. 4) **Caution** The layout of the power supply board may be different from lot to lot. (Figs. 5 and 6) ● The wiring within the frame is correct when the measured voltage is in the range of 14V to 19V. When the voltage across the electrolytic capacitor on the power supply board is correct, the 5P cable, which connects the power supply board and the control unit, may be defective. ● When the measured voltage is 0V, the wiring within the frame is defective. ● When the problem cannot be remedied even if the 5P cable is replaced, the power supply board may be defective.	Replace the 5P cable. Reference See the Section ES-2 "Replacing the Frame." Replace the Inlet Metal Base Set. Reference See the Section ES-1 "Replacing the Wiring within the Frame." Replace the power supply board. Reference See the Section ES-3 "Replacing the Power Supply Board."	 Fig. 4  Fig. 5  Fig. 6

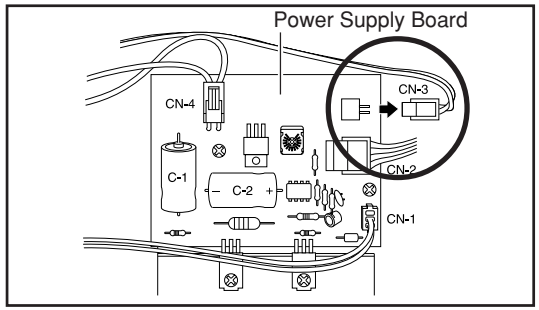
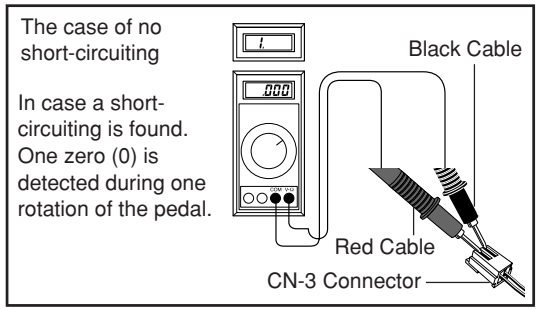
T-1 No Display on Control Unit after Power ON. (4)

Check	Maintenance	Illustrations
<MAJOR DEFECTS> • Back light does not work. (The power is on, but the back light does not work) (Only for EC-C400 and C400R) ● The control unit is defective.	Replace the control unit with a brand new one.	 Fig. 1
• Push-button operation does not work. ● The control unit is defective.	Replace the control unit with a brand new one.	
• Cannot read data card. Check that the card has been inserted correctly and the procedure has been carried out correctly. Reference See the Operation Manual. ● If the card has been inserted correctly, this indicates that the control unit is defective.	Replace the control unit with a brand new one.	
• LED on the control unit does not light. (Only for EC400 and EC-C400R) ● The control unit is defective.	Replace the control unit with a brand new one.	 Fig. 1

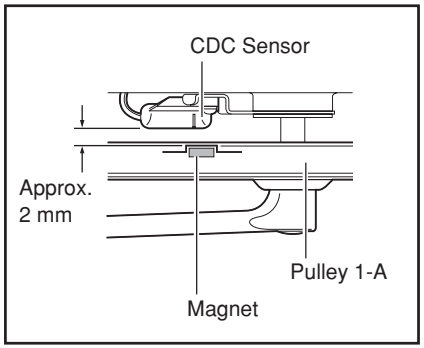
T-2 No Display of Cadence (The cadence remains at zero (0) and does not count when the pedal is rotated.) (1)

Check	Maintenance	Illsutrations
[1] Checking the Control Unit 1. Turn off the power. Loosen the four screws on the handlebar stem to remove the control unit. 2. Remove the cable connector which is connected to the back of control unit. 3. Slowly rotate the pedal while measuring the resistance across the connector terminals 1 and 2 of the 5P cable. (Fig. 1) ● When there is one short-circuiting (resistance becomes zero) during one rotation of the pedal, the control unit is defective. When there is no short-circuiting, proceed to the following check procedures.	Replace the control unit with a brand new one.	The case of no short-circuiting In case a short-circuiting is found. One zero (0) is detected during one rotation of the pedal.  Fig. 1

T-2 No Display of Cadence (The cadence remains at zero (0) and does not count when the pedal is rotated.) (2)

Check	Maintenance	Illustrations
[2] Checking the Main Unit 1. Remove the frame cover. (See the Section D-1 and D-2 "Removing the Frame Covers.") 2. Remove the CN-3 connector on the power supply board. (Fig. 2) 3. Slowly rotate the pedal while checking shortcircuit across the two terminals of the CN-3 connector by using a tester to see if there is one short-circuiting during one rotation of the pedal. (Fig. 3) **Caution** When the pedal is rotating, keep hands away from the workload unit. ● If short-circuiting is found, the 5P cable which connects the power supply board and the control unit is defective. When there is no short-circuiting, proceed to the following check procedures.	Replace the 5P cable. Reference See the Section ES-2 "Replacing the 5P Cable."	 Fig. 2  Fig. 3

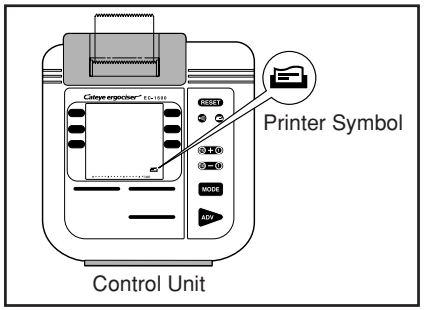
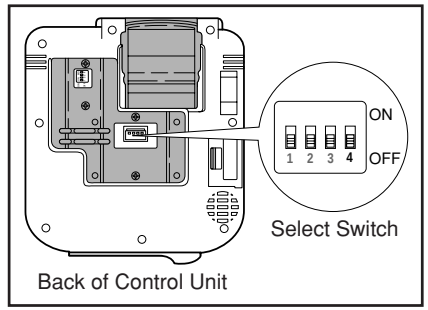
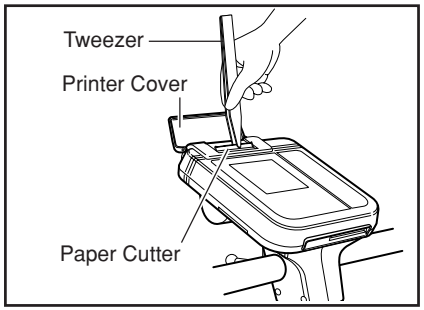
T-2 No Display of Cadence (The cadence remains at zero (0) and does not count when the pedal is rotated.) (3)

Check	Maintenance	Illsutrations
[3] Check the positional relation between the CDC sensor and the magnet of the large gear. (Fig. 4) 1. Secure a gap of about 2 mm between the surface of the CDC sensor and that of the CDC magnet. (Fig. 5) Check if there is any short-circuiting in the CN-3 connector again. ● When a short-circuiting is found, the positional relation between the CDC sensor and the CDC magnet of the large gear is incorrect. ● When there is no shortcircuit, the CDC sensor is defective.	Replace the CDC sensor. Reference See the Section ES-5 "Replacing the CDC Sensor".	 Fig. 4

T-3 No Display of Pulse Rate

Check	Maintenance	Illustrations
1. Turn on the power to display the in-training screen (any exercise program). 2. Install a brand new pulse sensor, and check if pulse rate will be displayed. ● When the pulse rate can be displayed, the pulse sensor is defective. ● If the pulse rate cannot be displayed, this indicates that the pulse sensor jack or pulse sensor jack board is defective.	Replace the pulse sensor with a brand new one. Replace the pulse sensor jack or pulse sensor jack board with the brand new one. Reference See the Section ES-11 "Replacing the Pulse Sensor Jack and Pulse Sensor Jack Board."	

T-4 No Printer Operation (1)

Check	Maintenance	Illsutrations
In such cases as display of the LCD panel, etc. operate without problem, but the printer does not operate, the following cases are possible: [1] Checking the Control Unit 1. Check that the printer symbol is displayed on the LCD panel and the printer is in a working status. (Fig. 1) 2. Check if the setting of control unit is in the setting that the printer is not used. (Check if the No.4 select switch on the back of the control unit is in the "OFF" position.) (Fig. 2) 3 Check if the thermal paper is not jammed at the printer head. ● Remove the thermal paper if it is jammed. (Fig. 3) 4. When no other problems are found, replace the control unit with a brand new one. 5. With the new control unit installed, check the printer operation. ● When the printer works fine, the control unit is defective. When the printer does not operate after the above-stated checks, proceed to the following procedures:	In case the printer symbol is not indicated on the LCD panel, press the printer button to have the symbol indicated. Replace the control unit with a brand new one.	 Fig. 1  Fig. 2  Fig. 3

T-4 No Printer Operation (2)

Check	Maintenance	Illustrations

[2] Checking the Main Unit

1. Turn off the power, and loosen the four screws on the handlebar stem to remove the control unit. (Fig. 4)
2. Remove the cable connector which is connected to the back of the control unit. (Fig. 4)
3. Remove the frame cover. (See the Section D1 & D2 "Removing the Frame Covers.")
4. Remove the CN-2 connector on the power supply board. (Fig. 5)
5. Using a tester, check for any short-circuiting across Terminal 1s and Terminal 5s at both ends of the 5P cable which connects the power supply board and the control unit. (Fig. 6)

● When there is no shortcircuit, the 5P cable is disconnected.

Replace the 5P cable.

Reference See the Section ES-2 "Replacing the 5P Cable."

● When it is short-circuited, the power supply board is defective.

Replace the power supply board.

Reference See the Section ES-3 "Replacing the Power Supply Board."

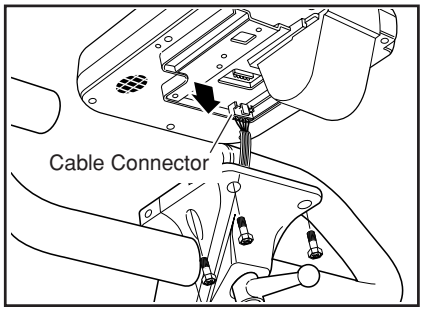


Fig. 4

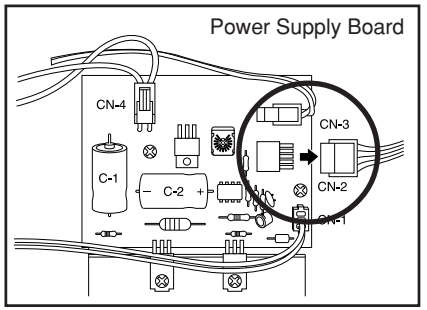


Fig. 5

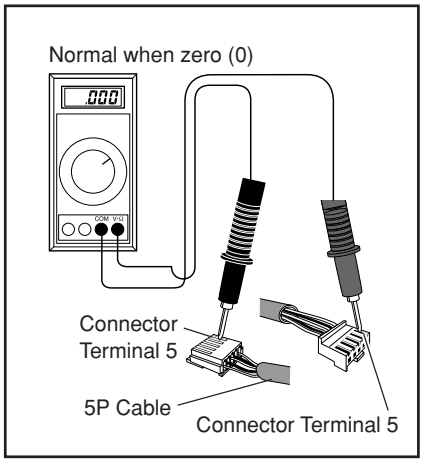
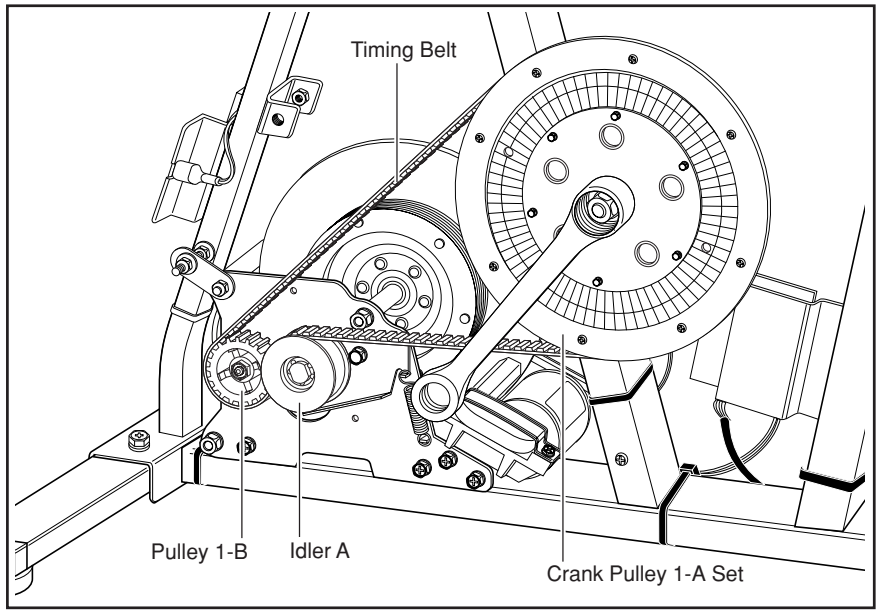
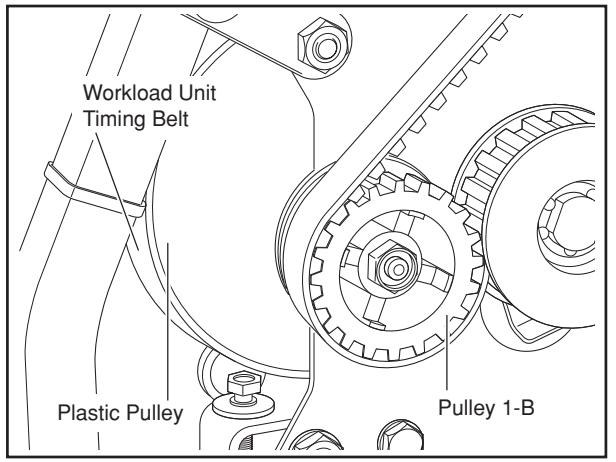


Fig. 6

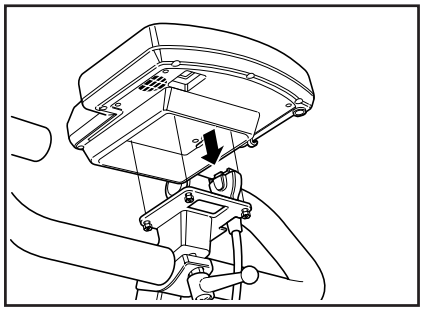
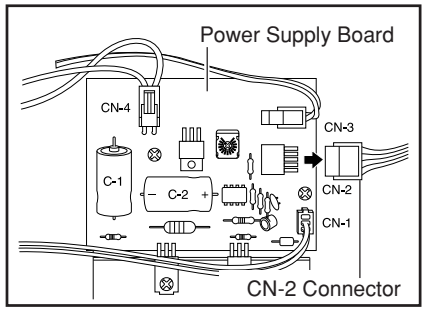
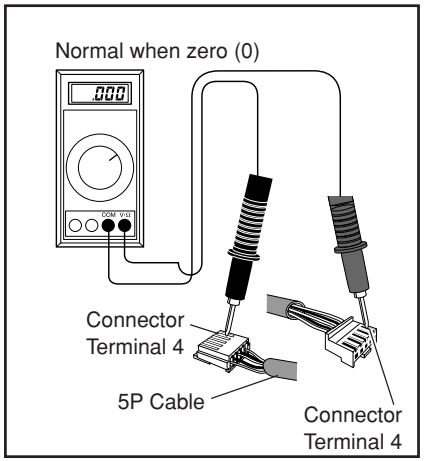
T-5 No Loading (Check of mechanical systems)

Check	Maintenance	Illsutrations
[1] Checking the Mechanical Systems See the Section D1 & D2 "Removing the Frame Covers" to remove the frame cover, and check the inside of frame. 1. Check if the timing belt has not been cut. (Fig. 1) ● The timing belt is cut.	Replace the timing belt with a brand new one. Reference See the Section MS-4 "Replacing the Timing Belt."	 Fig. 1
2. Rotate the crank and check if the belt of the workload unit will rotate. (Fig. 2) **Caution** When the crank is rotating, keep hands away from the workload unit. ● The pulley 1-B set is idling.	Replace the pulley 1-B with a brand new one. Reference See the Section MS-5 "Replacing the Pulley 1-B Set."	
3. Check if the belt (timing belt) of the workload unit has not been cut. (Fig. 2) ● The workload unit timing belt is cut.	Replace the workload unit. Reference See the Sections MS-1 & MS-2 "Replacing the Workload Unit."	 Fig. 2
4. Check if the plastic pulley of the workload unit has not been broken. (Fig. 2) ● The plastic pulley is broken.	Replace the workload unit. Reference See the Sections MS-1 & MS-2 "Replacing the Workload Unit."	

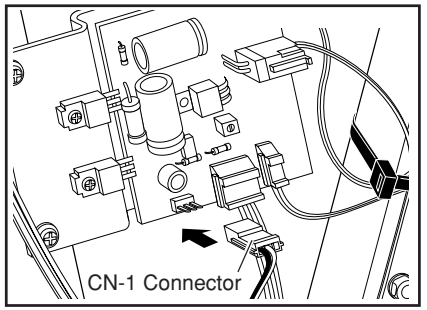
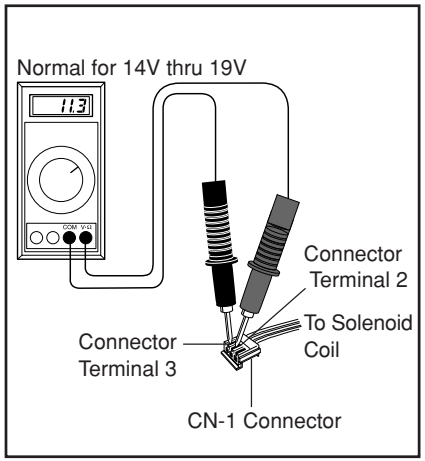
T-5 No Loading (Check of Electrical Systems) (1)

Check	Maintenance	Illustrations
[2] Checking the Electrical Systems 1. Connect the AC adapter, and turn on the power of the main unit. 2. Select the manual training program, set the pedal torque setting to 4.0 kg·m, and rotate the pedal at the rate of 50 rpm. If you can rotate it quite easily, no load will be applied. **Caution** When the pedal is rotating, keep hands away from the workload unit. 3. Replace the control unit with a brand new one. 4. Again, check the torque status under the manual training program. ● When the pedal torque is loaded, the control unit is defective. When no torque loading is possible, proceed to the following procedures.	Replace the control unit with a brand new one.	

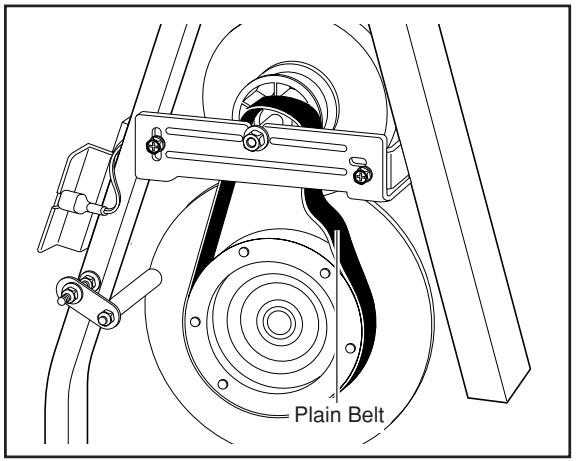
T-5 No Loading (Check of Electrical Systems) (2)

Check	Maintenance	Illsutrations
1. Turn off the power, and loosen the four screws on the handlebar stem to remove the control unit. (Fig. 1) 2. Remove the cable connector which is connected to the back of the control unit. (Fig. 1) 3. Remove the frame cover. Reference See the Sections D1 & D2 "Removing the Frame Covers." 4. Remove the CN-2 connector on the power supply board. (Fig. 2) 5. Using a tester, check for any short-circuiting across Terminal 1s and Terminal 4s at both ends of the 5P cable which connects the power supply board and the control unit. (Fig. 3) ● When there is no shortcircuit, the 5P cable is disconnected. When it is short-circuited, proceed to the following procedures:	Replace the 5P cable with a brand new one. Reference See the Section ES-2 " Replacing the 5P Cable."	 Fig. 1  Fig. 2  Fig. 3

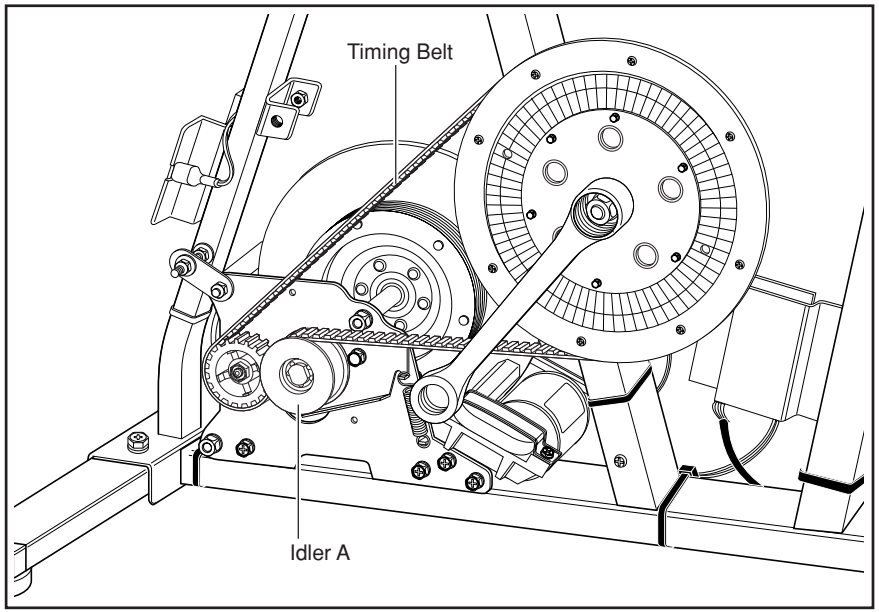
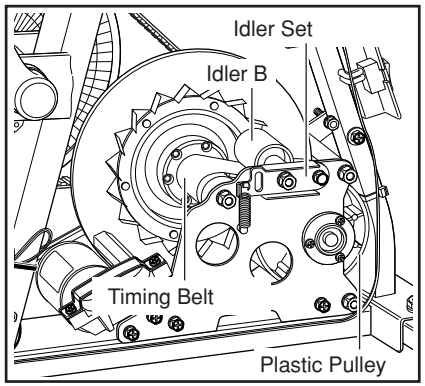
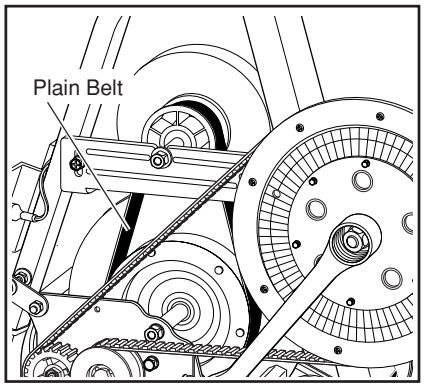
T-5 No Loading (Check of Electrical Systems) (3)

Check	Maintenance	Illustrations
1. Remove the connector CN-1 from the power supply board, and measure the resistance across Terminals 2 and 3 of the connector. When the reading is in the range of 9Ω to 14Ω, the connector is all right. (Figs. 4 & 5) ● When the meter reading is exceedingly large, the solenoid coil is defective. ● When the meter reading is in the acceptable range, the power supply board may be defective.	Replace the workload unit. Reference See the Sections MS-1 & MS-2 "Replacing the Workload Unit." Replace the power supply board. Reference See the Section ES-3 "Replacing the Power Supply Board."	 Fig. 4  Fig. 5

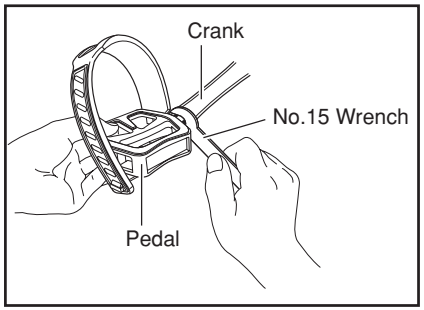
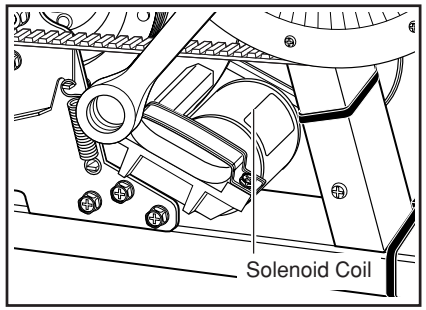
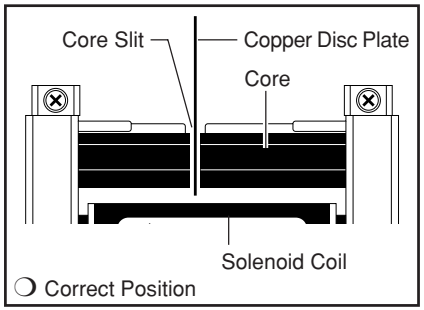
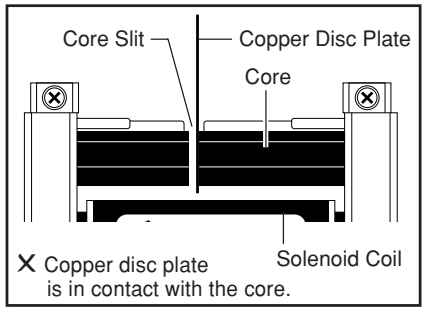
T-6 No Pedal Rotation (Locked)

Check	Maintenance	Illsutrations
1. Remove the frame cover, and check the inside of frame. Reference See the Sections D1 & D2 "Removing the Frame Covers." 2. Check if the plain belt of the flywheel has not been detached. (Fig. 1) ● No damage on the plain belt ● The plain belt is damaged.	Apply the plain belt correctly. Reference See the Section MS-2 "Replacing the Workload Unit (w/ Flywheel)." Replace the workload unit and free wheel with brand new ones. Reference See the Section MS-2 "Replacing the Workload Unit (w/ Flywheel)."	 Fig. 1

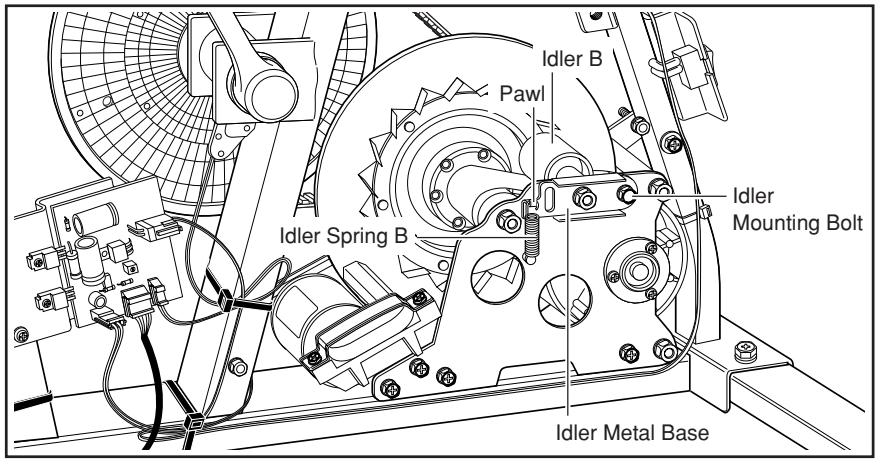
T-7-1 Unusual Noise (Continuous and Increasing)

Check	Maintenance	Illustrations
The noise generating source will be different depending on the cases whether it is of continuous noise or periodical noise (several times per rotation of pedal). [1] Noise is continuous and increasing. 1. Remove the frame cover. (See the Sections D-1 & D-2 "Removing the Frame Covers.") 2. Check if the idler A has been worn out. (Fig. 1)	When it has been worn out, replace it with a brand new idler A set. Reference See the Section MS-6 "Replacing the Idler A Set."	 Fig. 1
3. Check if the idler B has been worn out. (Fig. 2)	When it has been worn out, replace it with a brand new idler B set. Reference See the Section MS-7 "Replacing the Idler B Set."	 Fig. 2
4. Check if the plain belt has been deviated in position, thus causing friction.	When the plain belt is shifted and is going to be damaged, replace both the workload unit and the flywheel set with new ones.	 Fig. 3

T-7-2 Unusual Noise (Periodical)

Check	Maintenance	Illsutrations
[2] Noise is Periodical. 1. Noise occurs around once per rotation of the pedal. ● The pedal installation may not be correct. (Fig. 1)	Use a No.15 wrench and securely fasten the pedal to the crank. (both sides)	 Fig. 1
2. Sliding noise occurs around 17 times per rotation of the pedal. Remove the frame cover, and check the inside of frame. Reference See the Sections D-1 & D-2 "Removing the Frame Covers."		 Fig. 2
● The copper disc plate of the workload unit may touch the solenoid coil. (Figs. 2 & 3)	Correct the position of the copper disc plate. Reference See the Sections ES-4 "Correcting the Position of Solenoid Coil." [If the plate is warped and the position of solenoid coil cannot be corrected, replace the workload unit.] Reference See the Sections MS-1 & MS-2 "Replacing the Workload Unit."	 Fig. 3  Fig. 4

T-7-3 Unusual Noise (Noise occurs when the pedal is rotated with a large torque.)

Check	Maintenance	Illustrations
[3] Noise occurs when the pedal is rotated with a large torque. A large sound "bang" occurs when the pedal is abruptly rotated with a large torque. Remove the frame cover, and check the inside of frame. Reference See the Sections D-1 & D-2 "Removing the Frame Covers." 1. Check if the idler spring B is detached.	Hook the idler spring B on the pawl of the idler. **Caution** Be careful that the end of the spring does not cause injury to your hands.	 Fig. 1
2. Check if the idler mounting bolt is detached or loosened.	Securely fasten the idler mounting bolt.	

D-1 Removing the Frame Covers (1)

Upright Type (EC-1200, EC-1600 & EC-C400)

When any repair or adjustment of parts within the frame is required, remove the frame covers in the following procedures.

REMOVAL

1. Remove the pedals at both the left and right sides. (The left side pedal can be removed by turning it in the clockwise direction, and the right side pedal can be removed in the counter-clockwise direction.) (Fig. 1)
2. Remove the crank cover fixing screws. The narrow-width area of the crank cover should be positioned in between the frame cover and the crank. (Fig. 2)
3. Remove the leg pipe fixing screws. (Fig. 3)
   * You do not have to remove the leg pipe itself.
   * For the model EC-1600, remove the leg pipe cover.
4. Shift the rubber base at the seat post lock knob away from the center cover.
5. Loosen the center cover fixing screw a little, and lift the center cover upward. (Do not remove it.) (Fig. 4)
6. Loosen the four screws on the inlet cover. (Fig. 5)
7. Remove the frame cover fixing screw with a screwdriver before removing the frame cover. (Fig. 6)

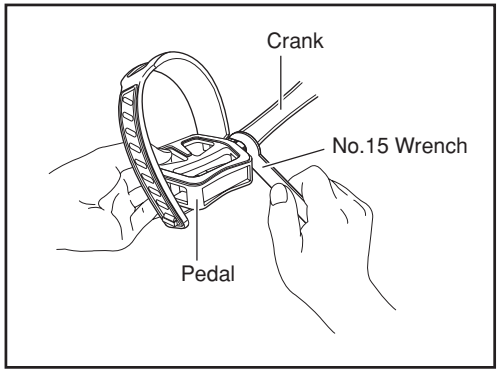


Fig. 1

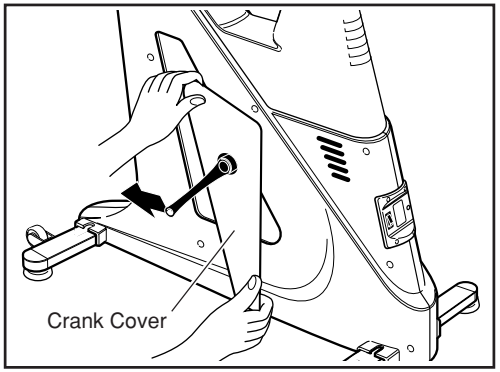


Fig. 2

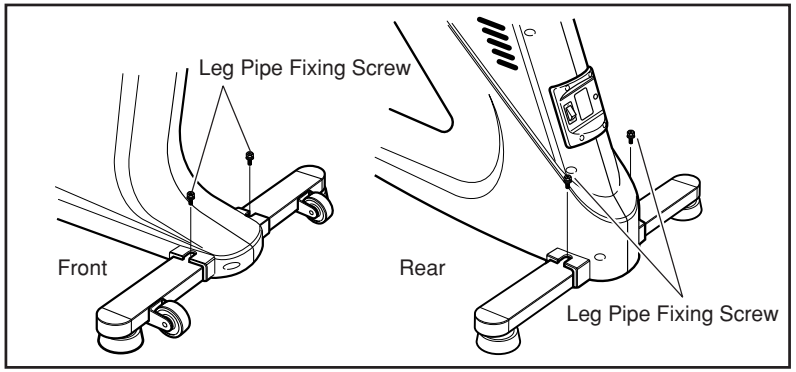


Fig. 3

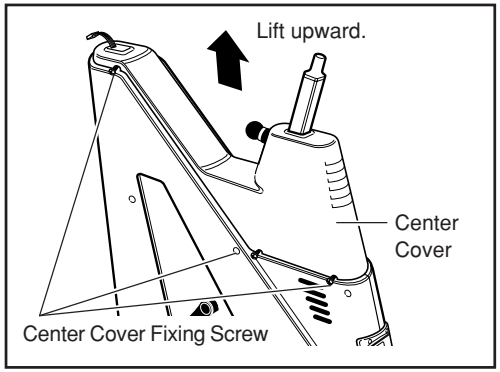


Fig. 4

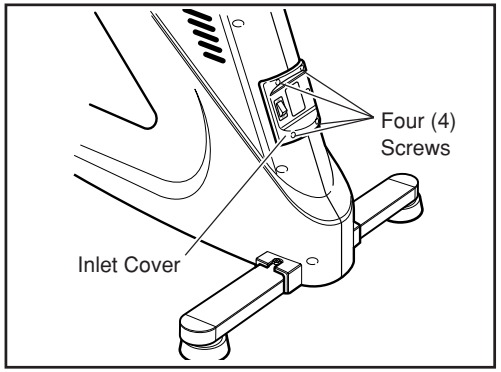


Fig. 5

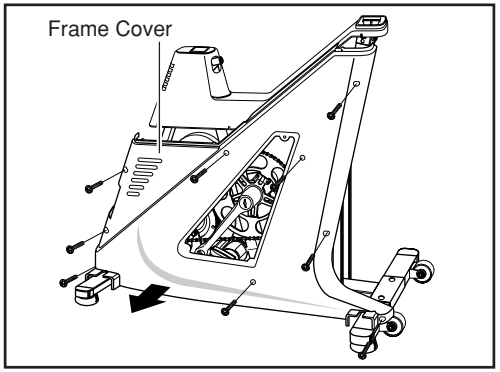


Fig. 5

D-1 Removing the Frame Covers (2)

ASSEMBLING

1. Place the frame covers onto the frame at both right and left sides, paying attention to the position of the crank.
2. Fix the right and left frame covers with frame cover fixing screws.
3. Mount the inlet cover with four screws. (Fig. 5)
4. Set the center cover to the frame cover correctly in position, and fix it with the center cover fixing screws. (Fig. 4)
5. Pass the crank through the hole on the crank cover, and fix the crank cover onto the frame cover with screws. (Fig. 2)
6. Set the rubber base for the seat post lock knob, and then mount the right and left pedals.
7. Fix the leg pipe with the leg pipe fixing screws. (For the model EC-1600, mount the leg pipe cover.)

D-2 Removing the Frame Covers (1)

Recumbent Type (EC-3600, EC-3700 & EC-C400R)

When any repair or adjustment of parts within the frame is required, remove the frame covers in the following procedures.

■REMOVAL

1. Remove the pedals at both the left and right sides. (The left side pedal can be removed by turning it in the clockwise direction, and the right side pedal can be removed in the counter-clockwise direction.) (Fig. 1)
2. Remove the crank cover fixing screws. The narrow-width area of the crank cover should be positioned in between the frame cover and the crank. (Fig. 2)
3. Remove the leg pipe fixing screws. (Fig. 3)

   * You do not have to remove the leg pipe itself.
4. Remove the frame cover fixing screw with a screwdriver before removing the frame cover. (Fig. 4)

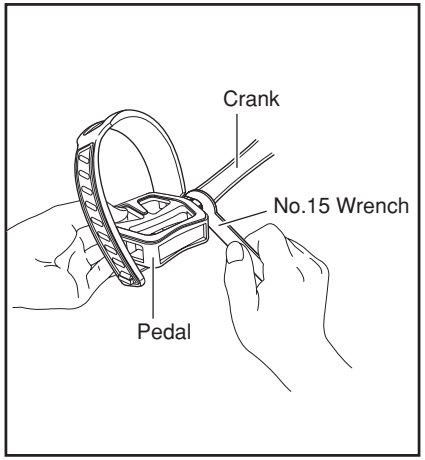


Fig. 1

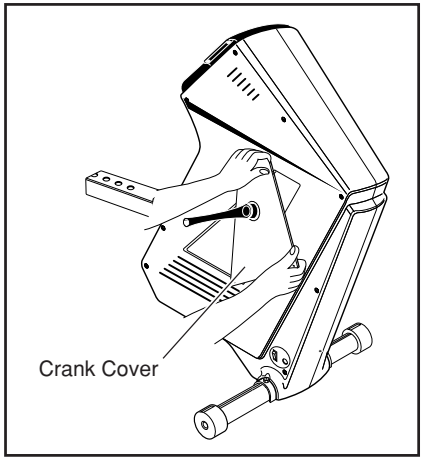


Fig. 2

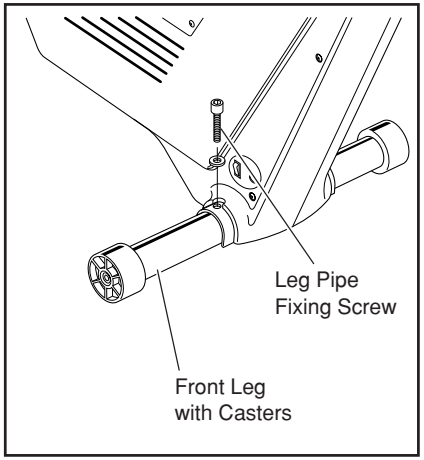


Fig. 3

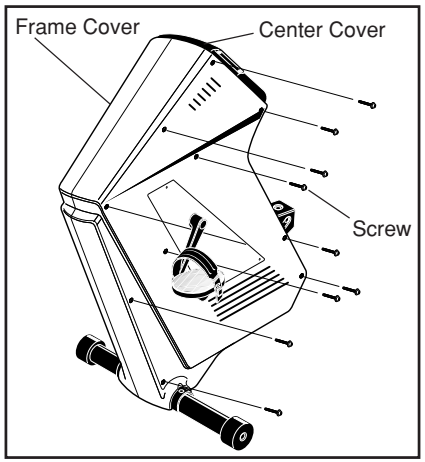


Fig. 4

D-2 Removing the Frame Covers (2)

■ASSEMBLING

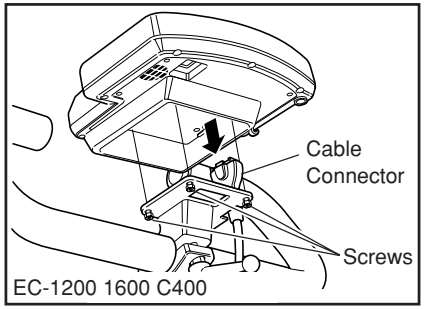
1. Place the frame covers onto the frame at both right and left sides, paying attention to the position of the crank. At the same time, the center cover should be built in.
2. Fix the right and left frame covers with frame cover fixing screws.
3. Pass the crank through the hole on the crank cover, and fix the crank cover onto the frame cover with screws. (Fig. 2)
4. Fix the front leg with casters with the leg pipe fixing screws.
5. Mount the pedals.

D-3 Disassembly of a Control Unit

1. Turn off the power and remove the control unit, loosening the four screws before doing so. Remove the cable connector from the control unit, too. (Fig.1)

   Reference See the operation manual for details relating to each model.

2. Turn over the control unit to remove the six to eight screws on the back side. This can be separated to the upper and lower body.
   As the upper and lower bodies are connected with cables, open the unit slowly.



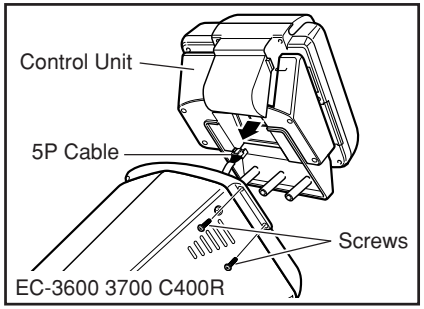
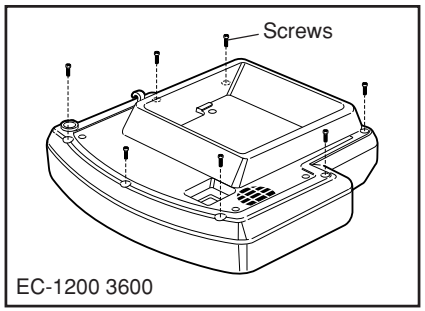
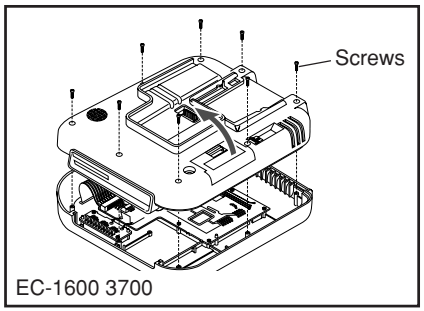


Fig. 1





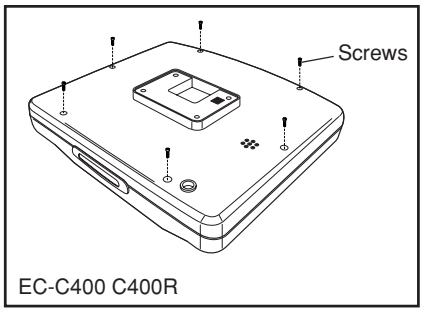


Fig. 2

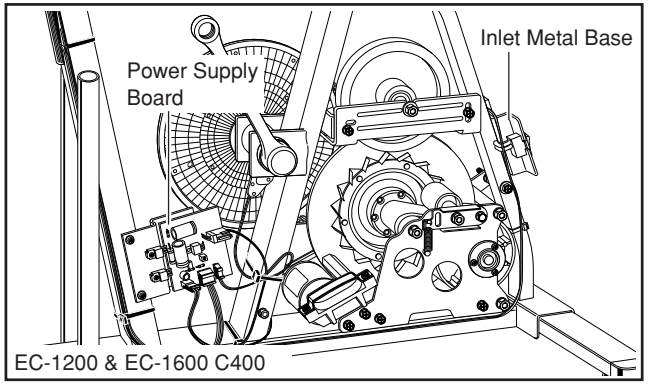
ES-1 Replacing the Wiring within the Frame (1)

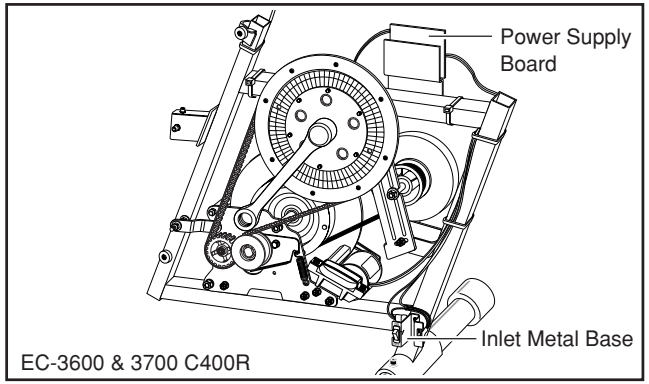
[A] Removing the Wiring Parts

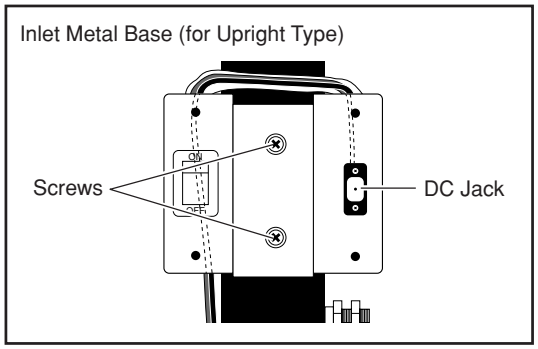
1. Remove the frame cover.

   Reference > See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Loosen the two screws on the inlet metal base to remove them. (Fig. 1)
3. With the stopper being held with fingers, pull the CN-4 connector off the power supply board. (Fig. 2)
4. Cut the cable holder (two places) with a nipper. (Fig. 3)







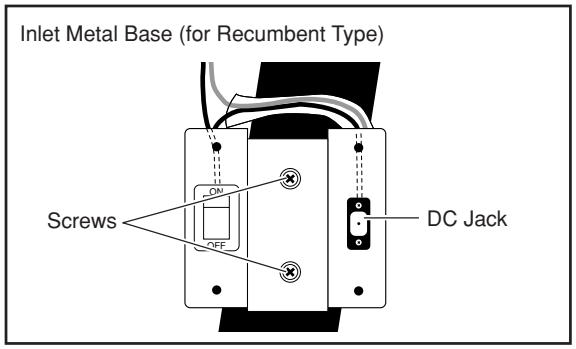


Fig. 1

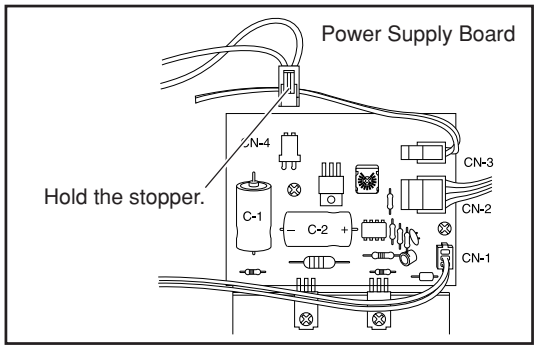


Fig. 2

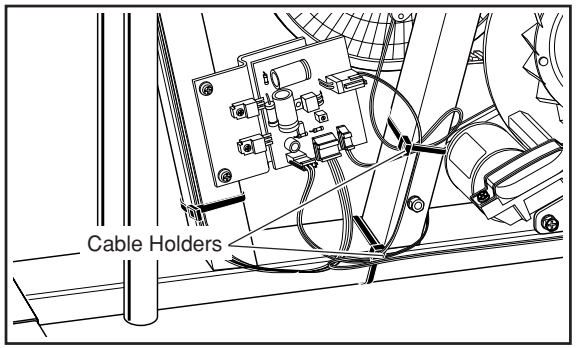


Fig. 3

ES-1 Replacing the Wiring within the Frame (2)

[B] Mounting the Brand New Wiring Parts

1. Mount the brand new inlet metal base to the frame with two screws.
2. Pass the wiring cable from beneath the DC jack of the power supply board along with the square pipe (21mm x 21mm) to the left direction, and then pass it through the back of the inlet metal base along with the square pipe toward the switch.
3. Connect the CN-4 connector to the power supply board.
4. Refer to the Section (2) "Checking the Wiring within the Frame" of T-1 "No Display on the Control Unit after Power ON" (1) , measure the voltage across the electrolytic capacitor C-1 to check that it is in the correct range of 14V to 19V.
5. Use the two cable holders to fix the CDC sensor cable together with the solenoid coil cable. (Fig. 3)
6. Provisionally connect the control unit, and check the unit works fine after turning on the power. Then, completely assemble the frame cover.

ES-2 Replacing the 5P Cable : For the model EC-1200 and EC-C400 (1)

● Removing the Existing Cable

1. Loosen the four screws which fix the control unit to remove the control unit. Also, remove the cable connector. (Fig. 1)
2. Remove the cable holder which fixes the 5P cable to the handlebar post.
3. Remove the frame cover.

   Reference See the Section D-1 "Removing the Frame Covers."
4. Remove the CN-2 connector from the power supply board. (Fig. 2)
5. Cut the cable holders which fix the 5P cable to the frame, and remove the 5P cable.

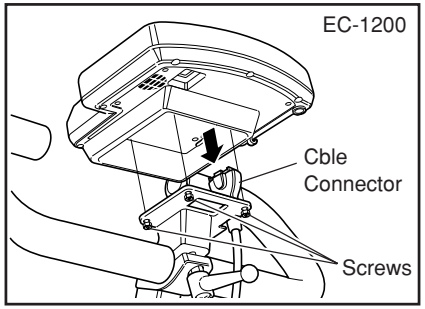


Fig. 1

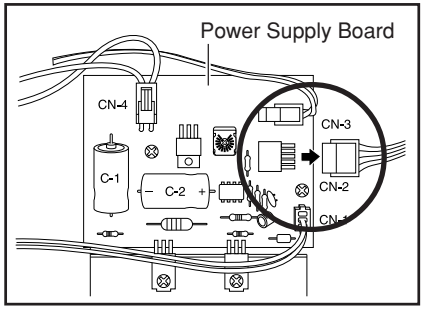


Fig. 2

ES-2 Replacing the 5P Cable : For the model EC-1200 & EC-C400 (2)

- Mounting the Brand New Cable

1. Mark the 5P cable at a point approx. 87cm (34-1/4") from the unit-side cable connector (Fig. 3), and connect the leading end of the CN-2 connector to the power supply board. (Fig. 4)
2. (1)Using cable holders, fix the 5P cable at the bottom of the handlebar pipe of the main unit frame. (2)Fix the cable at the marked point of the cable to the handlebar pipe just beneath the horizontal frame. (3)Pass the 5P cable along with the handlebar pipe, and the sagging portion should be binded with a cable holder. (Fig. 4)
3. Connect the cable connector to the control unit, and apply the connector cover. Then, fix the control unit to the handlebar post by using four screws. (Fig. 1)
4. Provisionally turn on the power, and check if the control unit works fine.
5. Fix the 5P connector to the handlebar post with the cable holder.
6. Mount the frame cover.

Reference See the Section D-1 "Removing the Frame Covers."

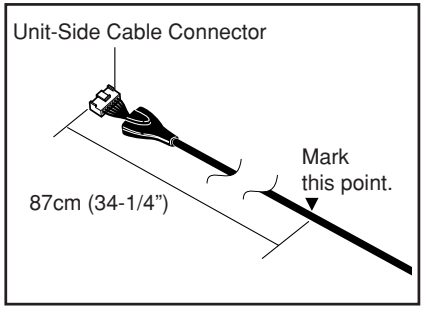


Fig. 3

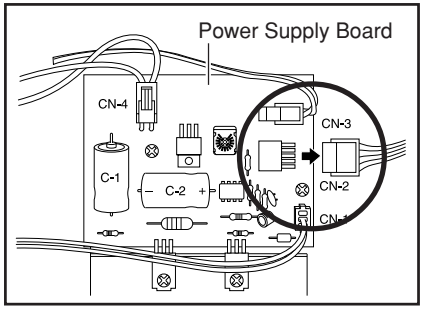


Fig. 4

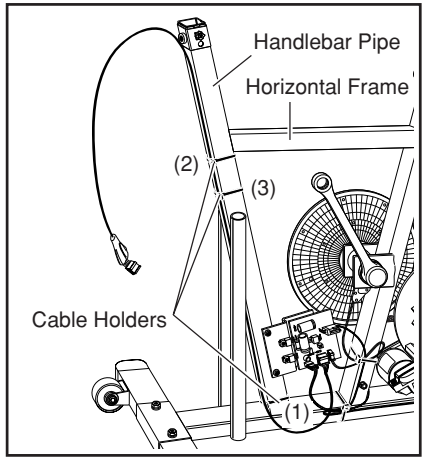


Fig. 5

ES-2 Replacing the 5P Cable : For the model EC-1600 (1)

● Removing the Existing Cable

5P Cable Handlebar Post

1. Loosen the four screws which fix the control unit to remove the control unit. Also, remove the cable connector. (Fig. 1) Slide the inner handlebar post cover upward, and unplug the cable connector. (Fig. 2)
2. Remove the screws of both the handlebar stem and the outer handlebar post cover to remove the 5P cable. (Fig. 3)

5P Cable within the Frame

1. Remove the frame cover.

   Reference See the Section D-1 "Removing the Frame Covers."

2. Remove the CN-2 connector at the end of the 5P cable from the power supply board. (Fig. 4)
3. Cut the cable holders which fix the 5P cable to the handlebar pipe, and remove the 5P cable. (Fig. 5)

To be continued on the next page.

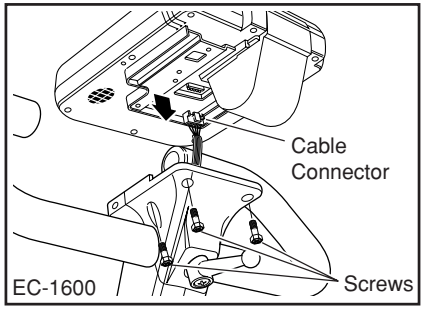


Fig. 1

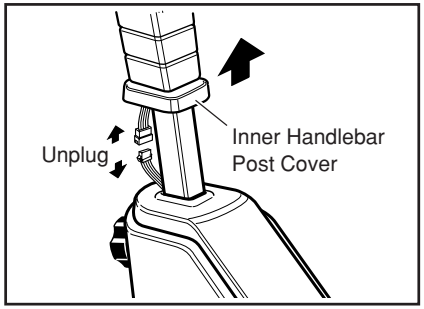


Fig. 2

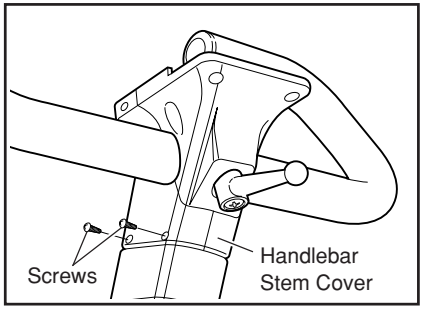


Fig. 3

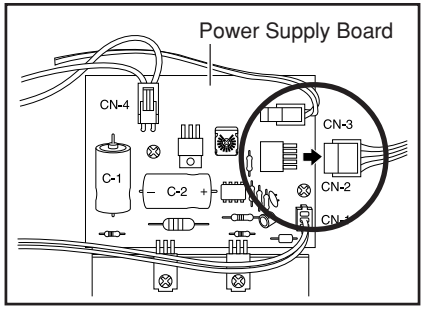


Fig. 4

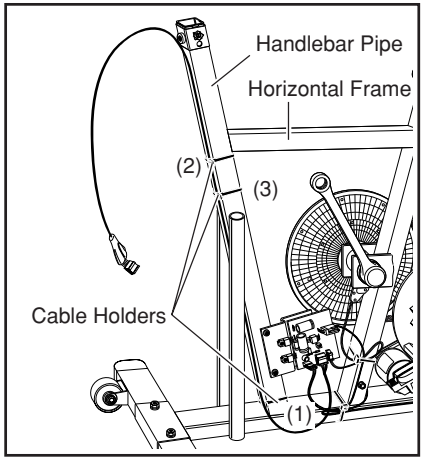


Fig. 5

ES-2 Replacing the 5P Cable : For the model EC-1600 (2)

● Mounting the Brand New Cable

5P Cable within the Handlebar Post

1. Using cable holders, bind the 5P cable, leaving approx. 5 cm (2”) portion from the control unit side cable connector, to the handlebar post. (Fig. 11) Assemble the handlebar post cover and the handlebar stem cover. (Fig. 8)
2. Connect the cable connector to the control unit, and fix the unit to the handlebar post by using four screws. (Fig. 6)

5P Cable within the Frame

1. Connect the CN-2 Connector at the end of the 5P cable to the power supply board. (Fig. 9)
2. (1)Using cable holders, fix the 5P cable to the frame, leaving the extra portion of 10 cm (4”) from the top of the handlebar pipe. (2) Fix the 5P cable at the bottom of the handlebar pipe. (3) Pass the 5P cable along the handlebar pipe, and bind the sagging portion to the point (3) by using cable holders. (Fig. 12)
3. Provisionally connect the intermediate cable connector, and turn on the power. Then, check if the control unit works fine.
4. Mount the frame cover to restore the original shape.

Reference See the Section D-1 "Removing the Frame Covers."

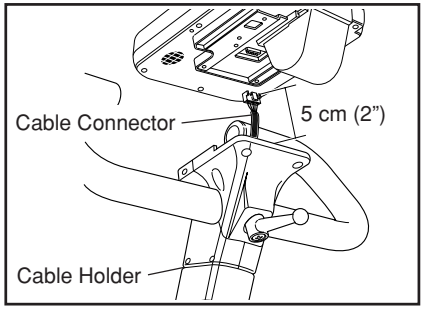


Fig. 11

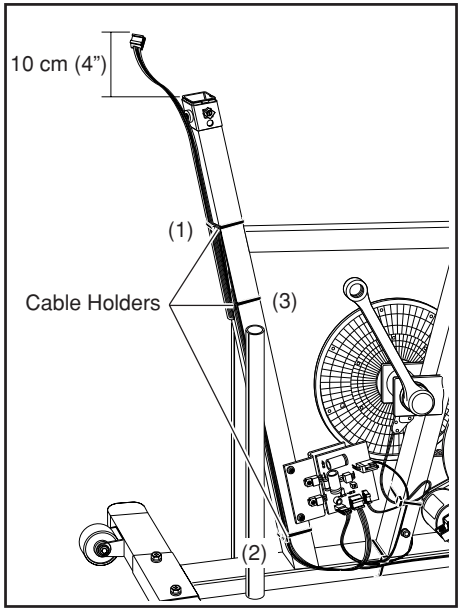


Fig. 12

ES-2 Replacing the 5P Cable : For the model EC-3600, EC-3700 & EC-C400R

● Removing the Existing Cable

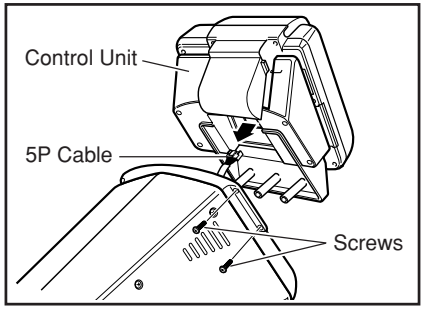
1. Loosen the four screws which fix the control unit to remove the control unit. Also, remove the cable connector. (Fig. 1)
2. Remove the frame cover.

   Reference See the Section D-2 "Removing the Frame Covers."
3. Remove the 5P connector from the power supply board. (Fig. 2)
4. Cut the cable holders which fix the cable to remove the 5P cable.

● Mounting the Brand New Cable

1. Leaving approx. 30 cm (12”) from the end of the frame, fix the 5P cable to the frame by using cable holders.
2. Connect the 5P cable to the power supply board, and bind the sagging portion to the point (2) of the frame. (Fig. 3)
3. Provisionally turn on the power, and check if the control unit works fine.
4. Mount the frame cover.

   Reference See the Section D-2 "Removing the Frame Covers."



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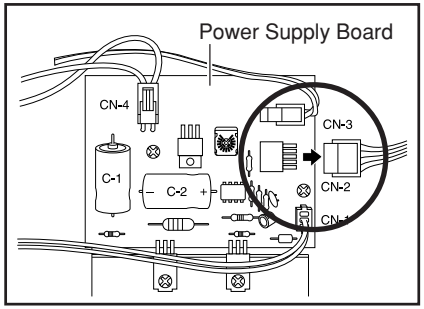


Fig. 2

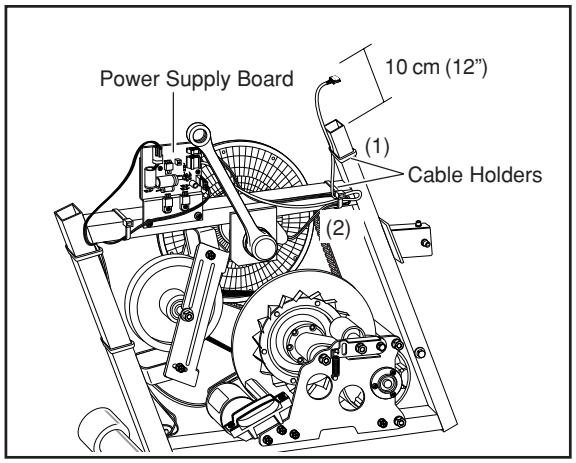


Fig. 3

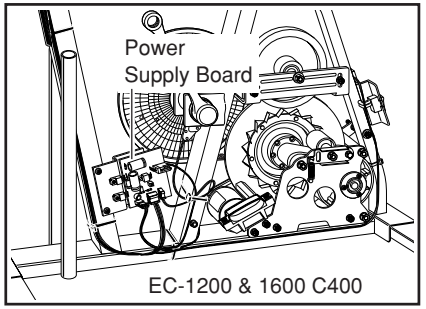
ES-3 Replacing the Power Supply Board (1)

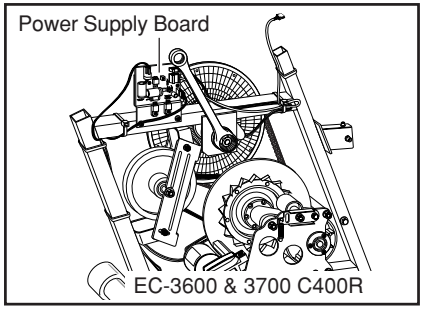
[1] Replacing the Power Supply Board

1. Remove the frame cover.

   Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Remove all connectors CN-1, CN-2, CN-3 and CN-4 which are connected to the power supply board.
3. Loosen the two screws which fix the power supply board to remove the board. (Fig. 1)
4. Securely fix the brand new power supply board by using two fixing screws.
5. Connect three connectors, CN-2, CN-3 and CN-4.





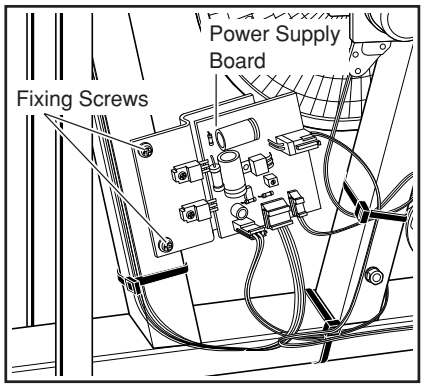


Fig. 1

ES-3 Replacing the Power Supply Board (2)

[2] Adjustment of Coil Current Value

1. Connect the cables for measuring coil current between the female connector of the solenoid coil and the male connector (CN-1) on the power supply board, and then connect the cables to an ammeter. (Fig. 2)
2. Turn on the power switch of the main unit, set the control unit to the manual mode, set the load display to 4.0 kg•m, and start the system.
3. Adjust the potentiometer (as shown in Figs. 3 and 4) on the power supply board with a blade-head screwdriver so that the coil current will be the value indicated on the workload unit solenoid coil. (A clockwise turn will increase the current, while a counter-clockwise turn will reduce the current.)

   Example: When the indication is 630 as shown in Fig. 5, adjust the potentiometer so that the coil current value will be 630mA.
4. Upon completion of the adjustment, detach the cable for measuring coil current, and connect the CN-1 connector directly to the power supply board.

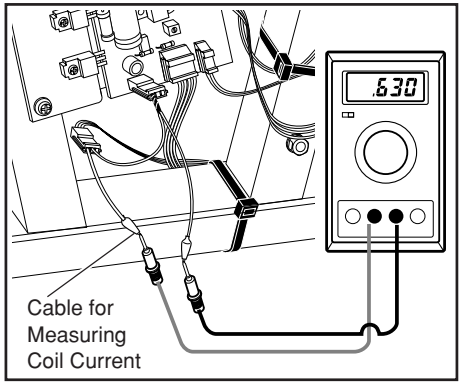


Fig. 2

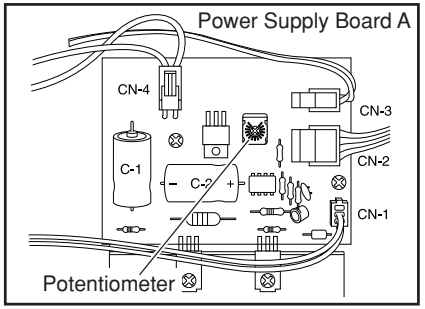


Fig. 3

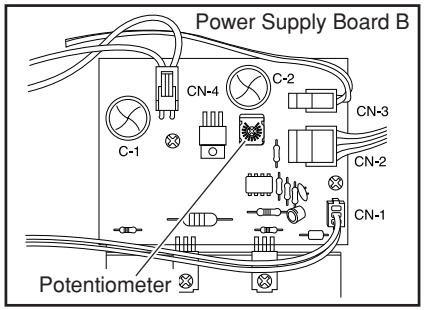


Fig. 4

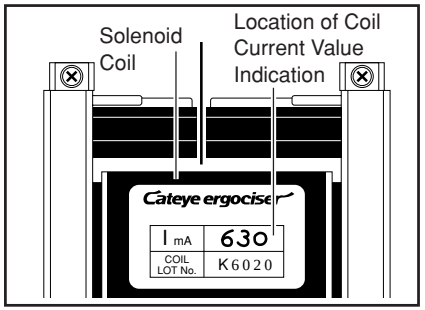


Fig. 5

ES-4 Correcting the Position of Solenoid Coil (1)

Perform the positional correction of the core slit section after detaching the frame cover and turning off the power.

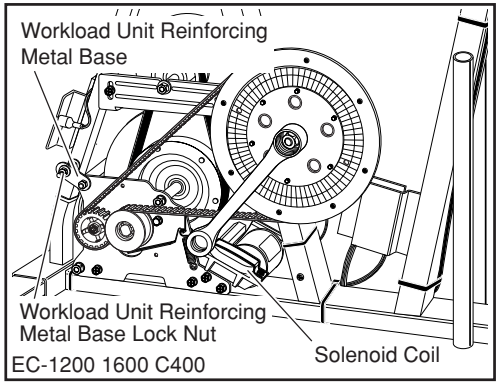
Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

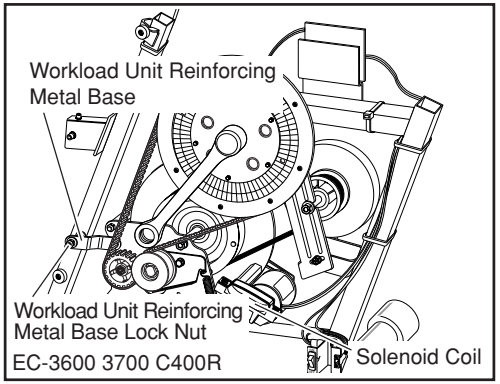
[1] Correction with Nuts of Workload Unit Reinforcing Metal Base

This correction is a minor correction method which allows adjustment by the fastening force of the frame-side nuts of the workload unit reinforcing metal base.

1. Check the contacting area by slowly rotating the copper disk plate with your hands.

Caution Be careful that the copper disk plate does not cause injury to your hands.
Be careful not to bend or damage the copper disk plate.





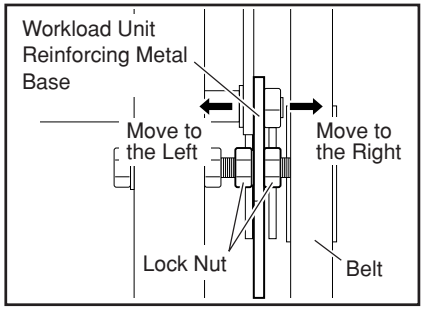


Fig. 1

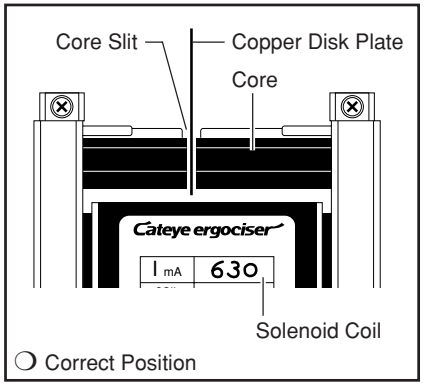


Fig. 2

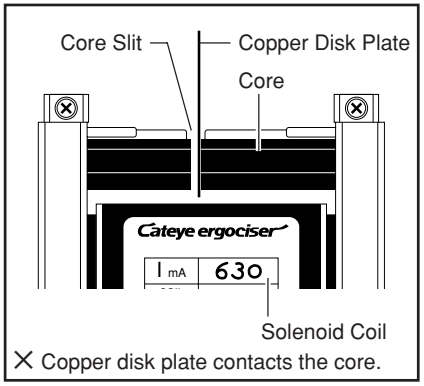


Fig. 3

ES-4 Correcting the Position of Solenoid Coil (2)

2. Adjust the position of the two lock nuts on the workload unit reinforcing metal base in the following procedures. (Fig. 1)
   The base is fixed by the fastening force of the two lock nuts.
   A. Loosen the two lock nuts temporarily. (Fig.1).
   B. If the right side of the copper disk plate makes contact with the core as shown in Fig.3, fasten the left-side nut. The plate moves to the left gradually. Adjust the plate until it comes close to the center of the core center. (Fig.2). At this position, rotate the plate slowly, and check for any contact over the entire area of the plate.
   C. Fasten the lock nuts once again.

[2] In case correction is not possible by the method stated in [1].

Replace the whole workload unit.

Reference See the Section MS-1 or MS-2 "Replacing the Workload Unit."

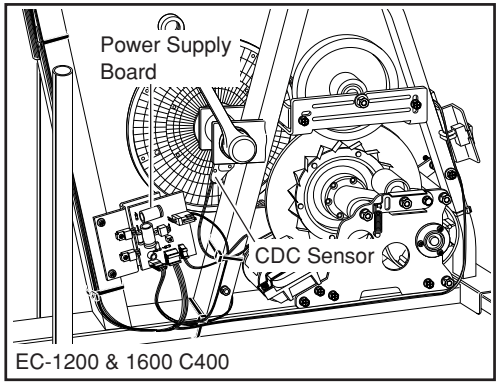
ES-5 Replacing the CDC Sensor (1)

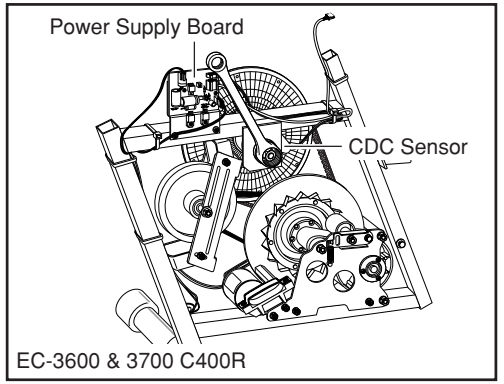
1. Remove the frame cover.

   Reference > See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Detach the CN-3 connector from the power supply board. (Fig. 1)
3. Cut the cable holders which fix the CDC sensor cable to the frame.
4. Remove the defective CDC sensor set by loosening the screws, and mount and fix the brandnew CDC sensor set. (Fig. 2)
5. Adjust the gap between the surface of CDC sensor and the surface of CDC magnet to be approx. 2 mm. (Fig. 3)

   Reference > If the gap is inadequate, bend the metal base to secure the specified gap.





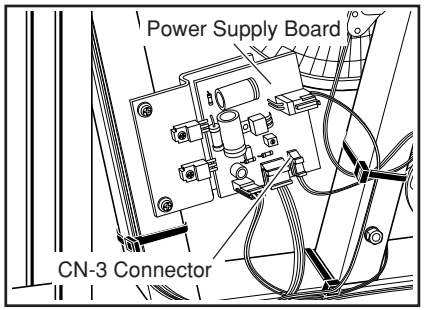


Fig. 1

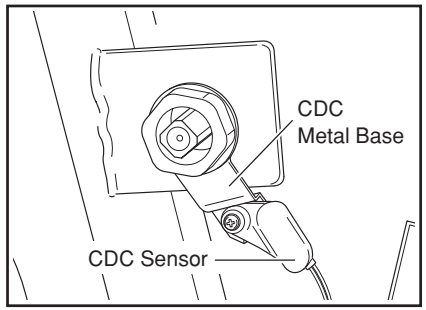


Fig. 2

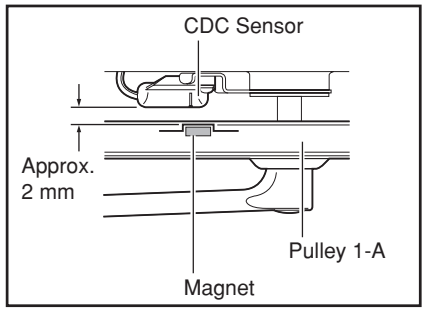


Fig. 3

ES-5 Replacing the CDC Sensor (2)

6. Securely connect the CN-3 connector to the power supply board. (Fig. 1)
7. Rotate the crank, and check if the pedal cadence will be displayed on the control unit.
8. Fix the CDC sensor cable to the frame by using cable holder. (Fig. 5)
9. Assemble the frame cover.

Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

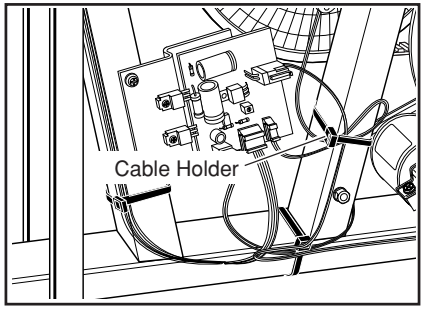


Fig. 5

ES-6 Replacing the Panel Keyboard

1. Remove the control unit by loosening four screws. Also remove the cable connector from the control unit. (Fig. 1)
2. The control unit can be separated into upper and lower parts when the eight screws on the bottom of the lower body of the unit are removed (Fig. 2). Be careful to separate them slowly since the upper and lower bodies are connected with a flat cable.
3. Remove the connector on the panel keyboard which is located at the upper body side, loosen the ten screws on the substrate, and remove them from the upper body. (Fig. 3)
4. Since the panel keyboard is fixed to the control unit with silicon, cut the silicon with a sharp cutter (Fig. 4). Peel the panel keyboard off the surface of upper body. (Fig. 5)
5. If the silicon remains at the upper body, remove it thoroughly.
6. Place the brandnew panel keyboard. The cable from the keyboard should be pulled in through the hole on the upper body. Press and adhere the panel keyboard in position.
7. Apply silicon at two depicted areas to prevent intrusion of sweat. (Figs. 4 and 6)
8. Mount the substrate and fix it with ten screws, and insert the connector of the panel keyboard. (Fig. 3)
9. Put the upper and lower body together, and fix them with eight screws.
10. Connect the cable connector to the control unit, and mount the unit to the main unit.

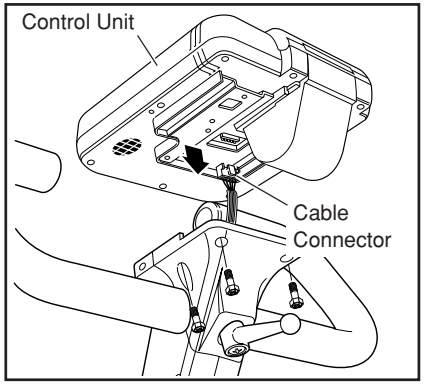


Fig. 1

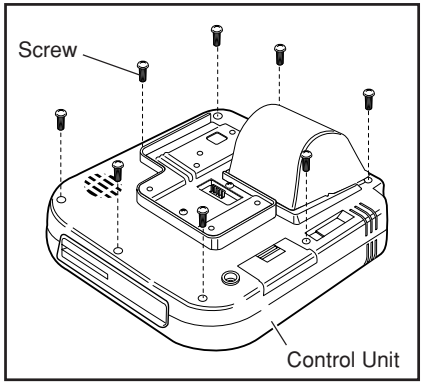


Fig. 2

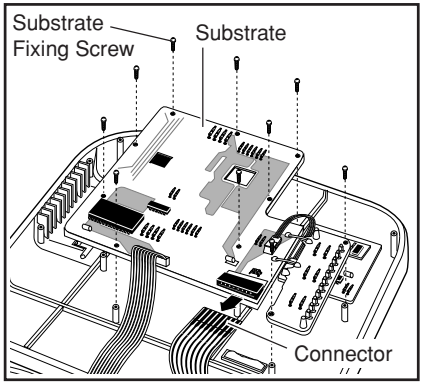


Fig. 3

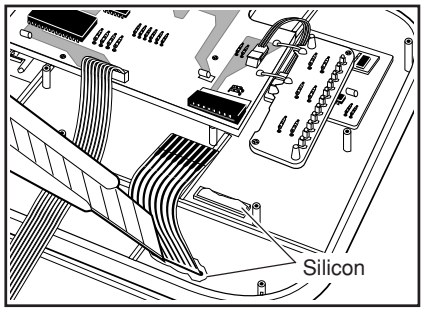


Fig. 4

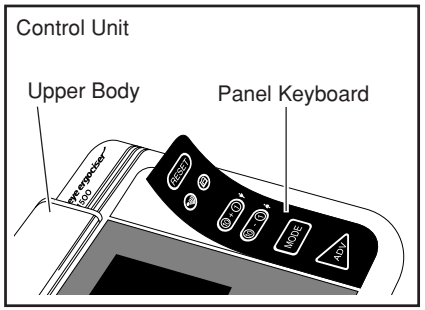


Fig. 5

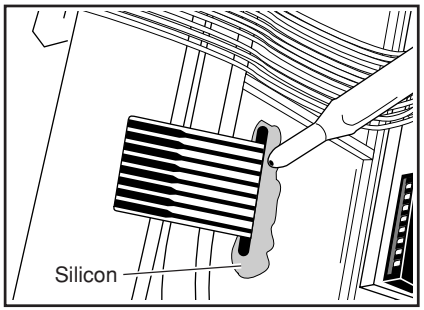


Fig. 6

ES-7 Replacing the Button Panel

1. Insert a thin cutting knife, while paying cautions not to damage the control unit, in between the button panel and the body, and carefully peel off the button panel. (Fig. 1 and 2)

Caution Be careful that the blade of the cutter does not cause injury to your hands.

2. Clean the adhesive agent, if any, on the control unit before placing a brandnew button panel.

Reference Sufficiently press the button panel thus placed.

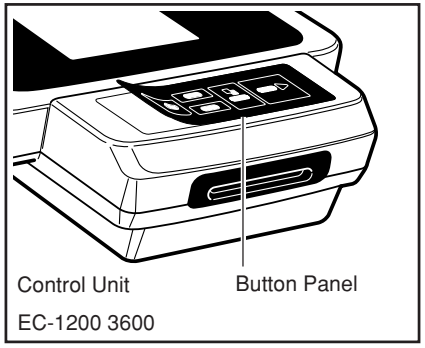


Fig. 1

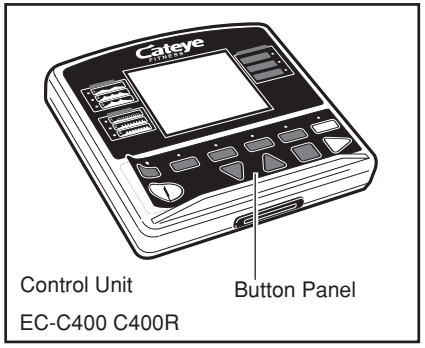


Fig. 2

ES-8 Replacing the Printer

1. Open the control unit into upper and lower bodies by referring to the Section ES-6 "Replacing the Panel Keyboard (1) & (2)."
2. Unit is fixed to the lower body with two screws. Remove these two screws. (Fig. 1)
3. The printer unit can be removed after detaching cable connectors CN-2 and CN-3 of the printer unit. To remove connector CN-2, pull it, lifting the printer unit upward. (Fig. 2)
4. Connect the connector CN-2 of the brandnew printer unit. Then, connect CN-3. For the connection, press it while moving it to right and left side alternatively.
5. Fix the printer unit with two screws. (Fig. 1)
6. Put the upper and lower bodies together, and fix them with eight screws.
7. Adjust the printing darkness by referring to the Section ES-9 "Adjusting the Printing Darkness."
8. Mount the control unit to the main unit.

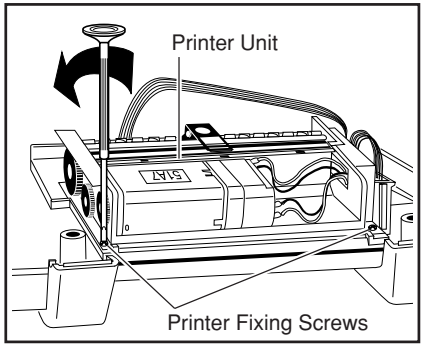


Fig. 1

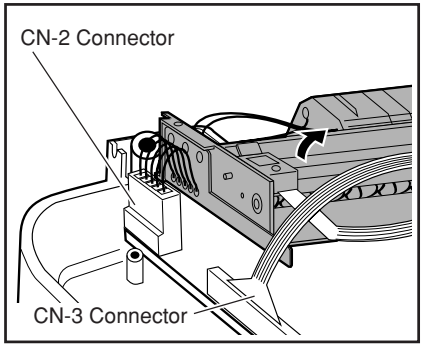


Fig. 2

ES-9 Adjusting the Printing Darkness

1. Remove the control unit from the main unit. (Fig. 1)
2. Loosen four screws on the bottom of the control unit, and remove the cable connector from the unit. (Fig. 1)
3. Remove the black metal base on the bottom of the control unit. (Fig. 2)
4. Provisionally connect the 5P connector on the bottom of the control unit to the main unit.
5. Turn on the power. Check if the printer symbol appears on the LCD panel and the printer is in the operating condition.
6. Check if the thermal paper is set in position.
7. Adjustment should be done with the control unit positioned horizontally. Press the ADV button on the control panel twice to perform a test printing. A counter-clockwise turn of the potentiometer PR on the bottom of the control unit will decrease the darkness, while a clockwise turn will increase it (Fig. 2). Set it to an appropriate darkness level. (An extreme clockwise turn of the potentiometer may distort the printed characters.)

Caution Never touch the potentiometer DCV.

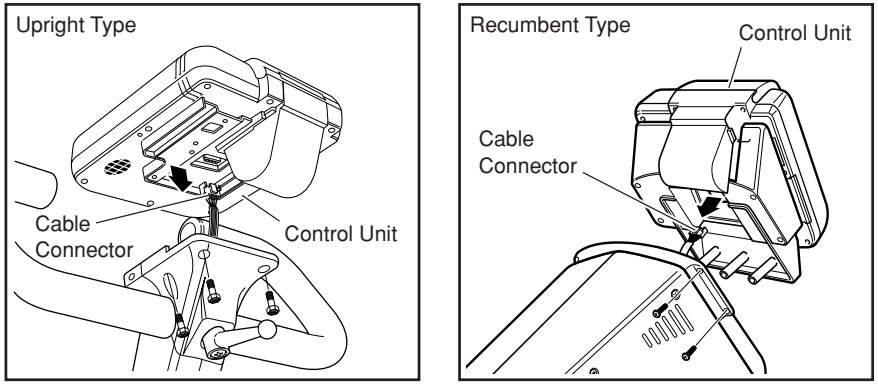


Fig. 1

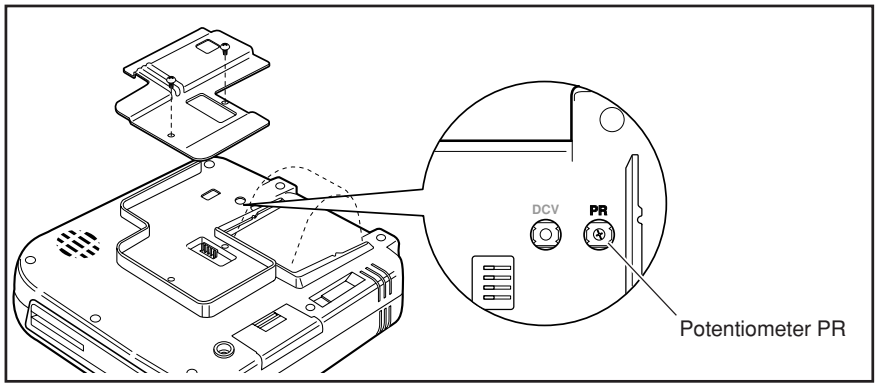


Fig. 2

ES-10 Paper Jamming in Printer

1. Open the control unit into upper and lower bodies by referring to the Section ES-6 "Replacing the Panel Keyboard (1) & (2)."
2. Remove the jammed paper with a tweezer or the like. (Fig. 1)
3. Assemble the control unit by referring to the Section ES-6 "Replacing the Panel Keyboard (9) & (10)."
4. Set the printer paper.

Reference See the Operation Manual.

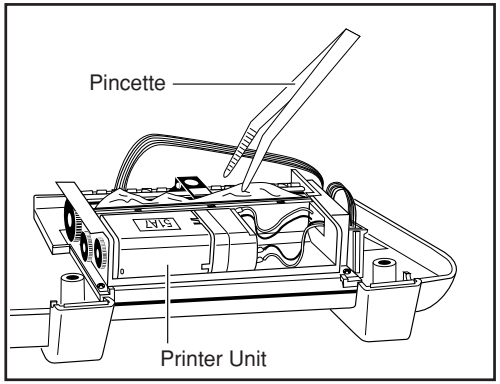


Fig. 1

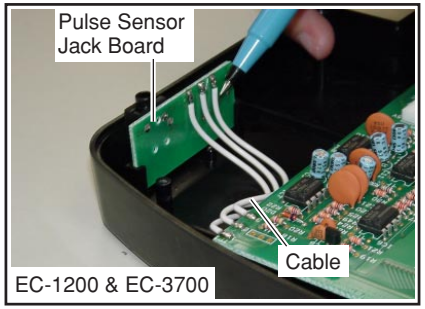
ES-11 Replacing the Pulse Sensor Jack and Pulse Sensor Jack Board (1)

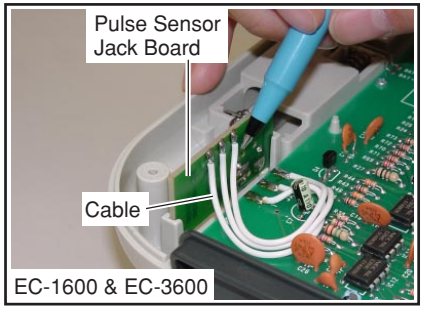
■Replacing the Pulse Sensor Jack Board

1. Turn off the power and open the control unit which accesses the upper and lower bodies.

   Reference See the Section D-3 "Decomposition of a Control Unit ".

2. In the case of the three cables (or four in the case of the ES-C400 and ES-C400R) soldered to the board, number the cables so that they can be matched to cable numbers 1 to 4 on the board. (Fig.1)
   Remove the cables using a soldering iron.
   Remove the defective board.
3. Insert a brand new board and solder the cable in place. Match the cables to the numbered cables on the board.
4. Bring the upper and lower bodies together and fasten them temporarily with the eight screws.
5. Insert the pulse sensor and check whether or not the control unit displays a value.
6. Fasten the eight screws.





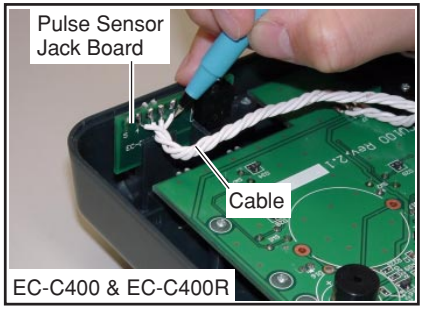


Fig. 1

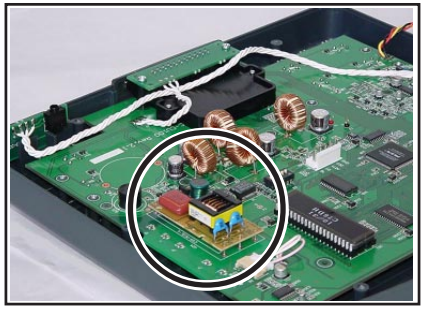


Fig. 2

ES-11 Replacing the Pulse Sensor Jack and Pulse Sensor Jack Board (2)

7. Mount the control unit on the main unit.

Warning Be sure to turn off the power before starting work. Particularly, in case of the EC-C400 and EC-C400R, the parts indicated in figure 2 are operating at high voltage and may cause electric shock. Furthermore, residual electric current is likely to be present for a little while after the power is turned off. Before restarting work, wait a few moments after the power has been turned off.

■Replacing Only the Pulse Sensor Jack

1. Turn off the power and open the control unit which accesses the upper and lower bodies.

Reference See the Section D-3 "Disassembly of a Control Unit ".

2. Lift the ear sensor jack board but not to the extent that the cable will become taut, and remove the jack with a soldering iron. Excessive solder should be removed using solder remover, etc.
3. Solder a brand new pulse sensor jack in place. (Fig.3)

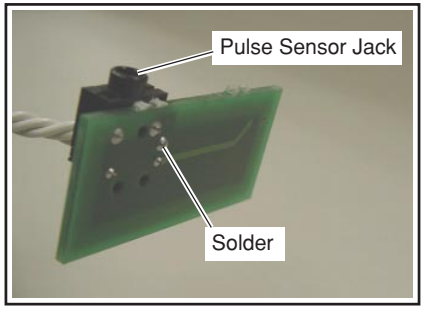


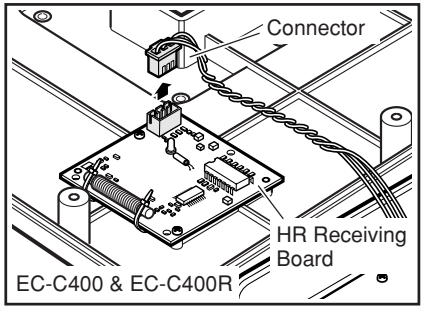
Fig. 3

ES-12 Replacing the HR Receiving Board (1)

1. Turn off the power and open the control unit which accesses the upper and lower bodies,

   Reference See the Section D-3 "Disassmbly of a Control Unit ".

2. Remove the connector from the reception board. (Fig.1)
3. Loosen the four screws to remove the board. (Fig.1)
4. Install a brand new board, securing it with four screws. Insert a connector.
5. Bring the upper and lower bodies together and secure them with eight screws.



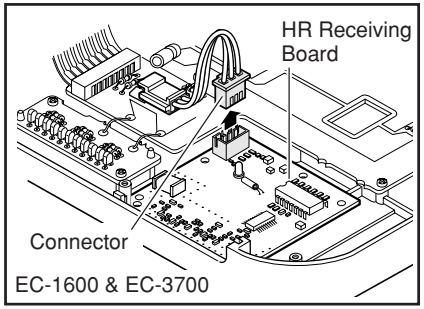
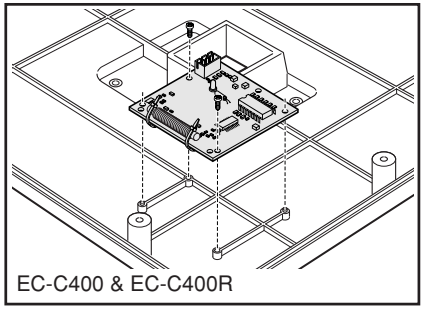


Fig. 1



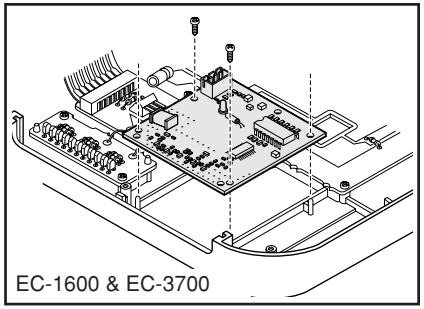


Fig. 2

ES-12 Replacing the HR Receiving Board (2)

6. Install the control unit in the main unit.

Warning Be sure to turn off the power before starting work. Particularly, in case of the EC-C400 and EC-C400R, the parts indicated in figure 3 are operating at high voltage and may cause electric shock. Furthermore, residual electric current is likely to be present for a little while after the power is turned off. Before restarting work, wait a few moments after the power has been turned off.

Caution The HR reception board is standard in the case of equipment for export while it is optional in the case of equipment sold on the domestic market. For information related to installation (in the case of products sold on the domestic market), follow the instructions in the operation manual of the Reception Board Kit. Be sure the power is turned off. Before restarting work, wait a few moments after the power has been turned off.

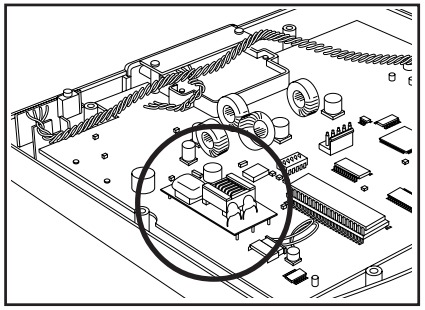


Fig. 3

MS-1 Replacing the Workload Unit (w/o Flywheel) (1)

■ Removing the Workload Unit

1. Remove the frame cover.

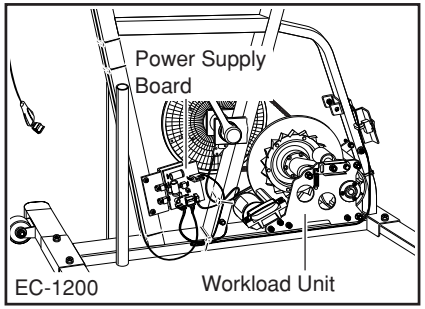
   Reference See the Section D-1 "Replacing the Frame Covers."

2. Detach the CN-1 connector on the power supply board.
3. Using a nipper or the like, cut the cable holder which fixes the CN-1 connector, while paying attention not to damage the cable. (Fig. 2)
4. Remove the crank pulley 1-A set.

   Reference See the Section MS-8 "Replacing the Crank Pulley 1-A Set."

   Also, remove the timing belt together with the crank pulley 1-A set.
5. Using a wrench, loosen the nuts, which fix the workload unit reinforcing metal base, on both the workload unit side and the frame side, and remove the metal base. (Fig. 3)
6. Remove the hexagonal head bolts securing the workload unit (four points at the right and left) as well as the bolt securing the workload unit metal base. Lift the entire unit upward and off the base, and then lift it either to the right or left to remove it completely.

   Caution Be careful that your hands are not injured by the copper disk plate when lifting the unit.
   Be careful not to bend or damage the plate.



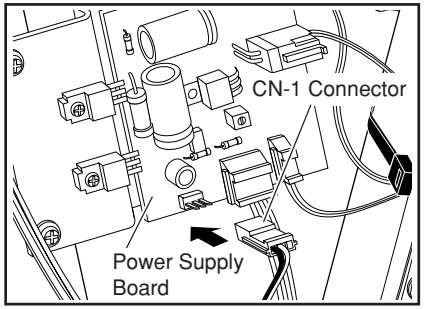


Fig. 1

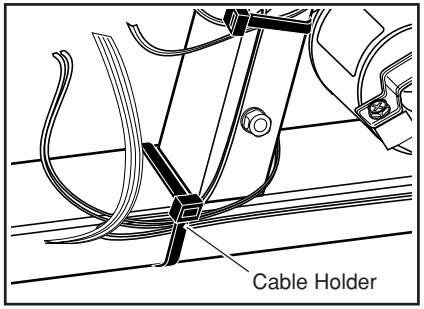


Fig. 2

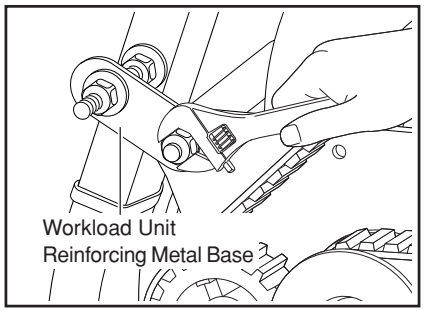


Fig. 3

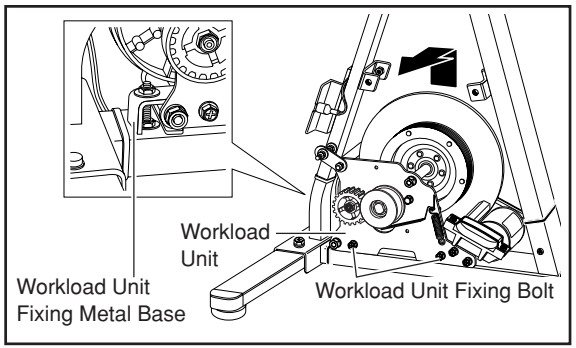


Fig. 4

MS-1 Replacing the Workload Unit (w/o Flywheel) (2)

■ Mounting the brand new Workload Unit

1. Assemble a brand new workload unit so that it will engage with the workload unit mounting metal base of the frame. (Fig.1)

   Caution Be careful that your hands are not injured by the copper disk plate. Be careful not to bend or damage the plate.

2. Tighten the crank bolt by using a cotterless gear crank removing/ fastening tool and a wrench (Figs. 2 and 3). Tightening torque should be 350kg cm to 400kg·cm, and tighten the bolt until the end of the crank shaft can level with the end surface of the bolt. Then, put the crank cap with a coin or the like. (Fig. 4)
3. Position the timing belt on the pulley 1-B. (Fig.4)
4. Position idler spring A on the pawl of the idler A set. (Fig.5)

   Caution Be careful that the end of the spring does not cause injury to your hands.

5. Position the timing belt on the pulley 1-A set. The entire timing belt can be positioned by rotating the crank forward (Fig.6)

   Caution Be careful not to pinch your fingers between the timing belt and crank pulley 1-A set.

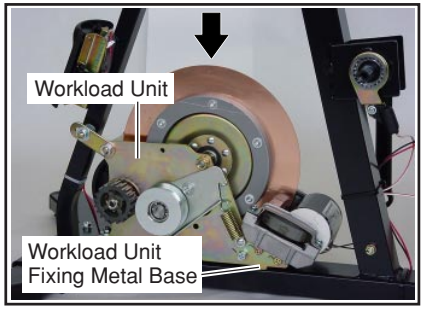


Fig. 1

Fig. 2

Fig. 3

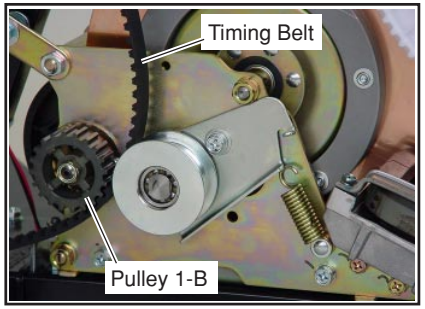


Fig. 4

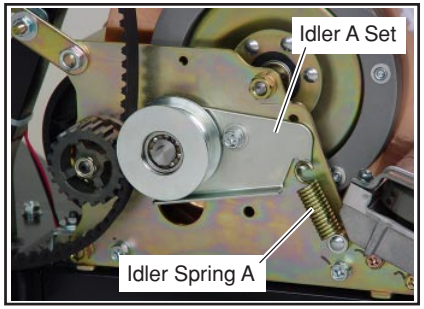


Fig. 5

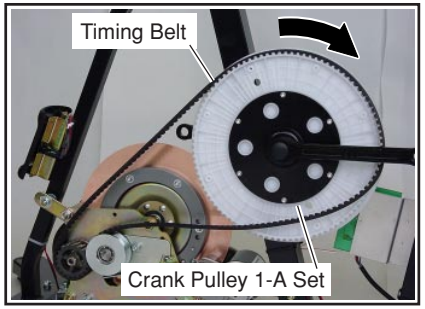


Fig. 6

MS-1 Replacing the Workload Unit (w/o Flywheel) (3)

6. Adjust the position of the workload unit so that the tension of the timing belt in the loaded area is optimal. Move the workload unit back and forth so that the longer edge of the derailleur fixing metal base is perpendicular to idler spring A. (Fig.7)

Caution Be careful that your hands are not injured by the copper disk plate. Be careful not to bend or damage the plate.

7. Tighten the workload unit fixing bolts securing the workload unit (four points, at the right and left) as well as the bolt for the base with a spanner. (Fig. 8) The tightening torque is 90 kg/cm to 120kg/cm.

8. Assemble the workload reinforcing metal base in between the bolts at the workload side and the frame side, and tighten the bolts with nuts. (Fig. 9)

* In case the nut is screwed in at the position where the workload-unit-side workload unit metal base is supposed to be mounted, remove the nut.

* The tightening torque at the workload unit side should be 90kg·cm to 120kg·cm, and the nut at the frame side should be provisionally tightened.

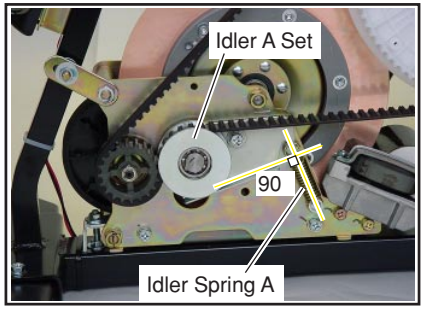


Fig. 7

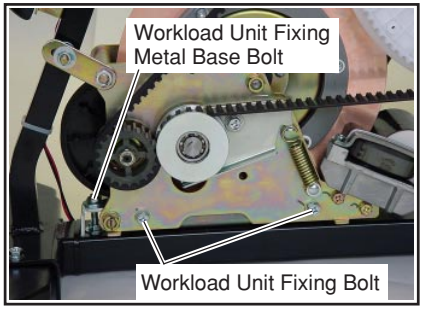


Fig. 8

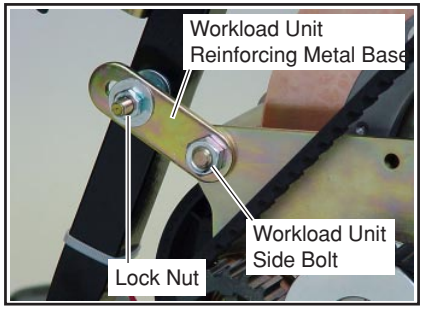


Fig. 9

MS-1 Replacing the Workload Unit (w/o Flywheel) (4)

■ Checking the Positions of Copper Disk Plate and Solenoid Coil Core Slit

- Regarding the workload unit, positions of copper disk plate and solenoid coil core slit have been adjusted before mounting the frame so that they will not touch each other while the plate is rotating. However, due to positional distortion caused by tightening the bolts while the frame is being mounted, the copper disk plate may touch the core. (Fig. 1)

- Rotate the copper disk plate slowly to check if it does not touch the core. If it does, it is necessary to eliminate the positional distortion caused by the tightening.

Caution When the copper plate is rotating, keep hands away from unit.

Reference See the Section ES-4 "Correcting the Position of Solenoid Coil."

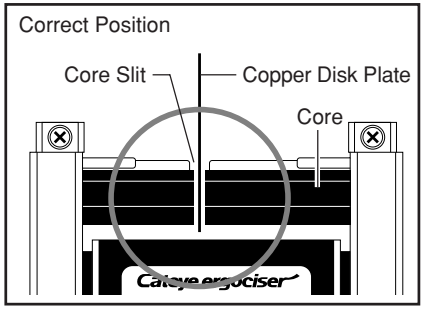


Fig. 1

MS-1 Replacing the Workload Unit (w/o Flywheel) (5)

Correction Method

Correction can be made by tightening the frame-side nuts of the workload reinforcing metal base. Tighten the metal base toward the direction in which the positional correction of the copper disk plate should be made, until the plate comes close to the center of the core slit (Fig. 1).

Reference See the Section ES-4 "Correcting the Position of Solenoid Coil."

1. After checking the correction direction, use a wrench to tighten the frame-side nut of the workload unit reinforcing metal base. Give the even tightening to both right and left sides.
2. As shown in Fig. 3, set a cable for measuring coil current in between the CN-1 female connector and the CN-1 male connector at the side of power supply board, and connect the cable to an voltmeter.
3. Turn on the power switch of the main unit, set the control unit to the manual mode, select the torque at 4.0kg·m, and start the system.
4. Adjust the volume of the power supply board (Fig. 5 and 6) with a driver until the coil current rate is the same as the value (Fig.4) displayed on the solenoid coil in the workload unit. Example: As shown in Fig. 3, when 630 is indicated, adjust the potentiometer so that the coil current will be 630mA.

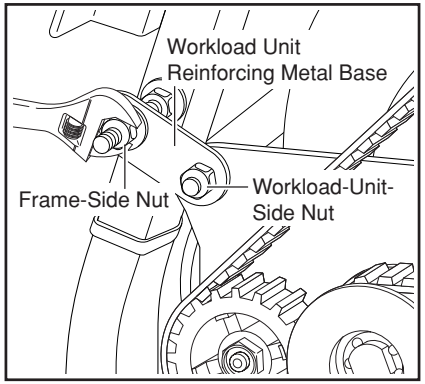


Fig. 2

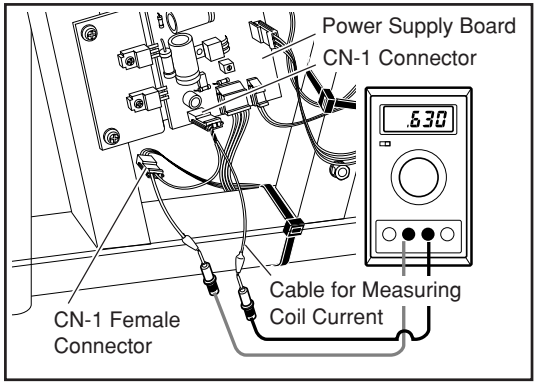


Fig. 3

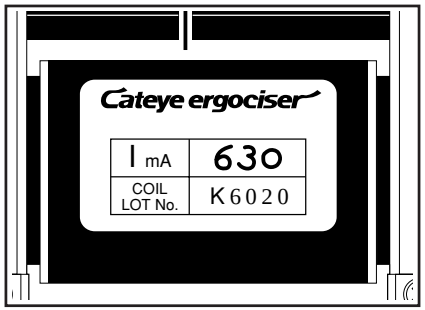


Fig. 4

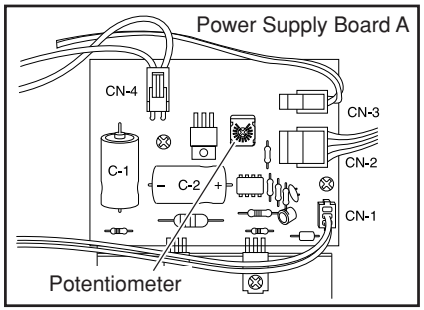


Fig. 5

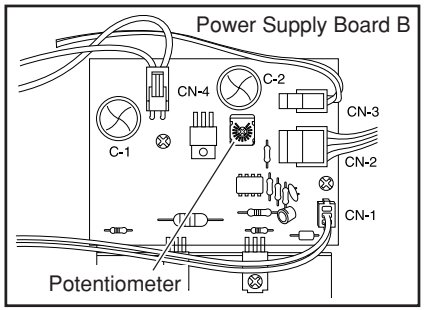


Fig. 6

MS-1 Replacing the Workload Unit (w/o Flywheel) (6)

5. After having adjusted the coil current, remove the measuring cable, and connect the female connector of the CN-1 cable directly to the male connector at the power supply board side.
6. Fix the cable onto the seat pipe with cable holders.

■ Adjusting the Flywheel

1. Adjust the flywheel by referring to the Section MS-3 "Adjusting the Flywheel."

MS-2 Replacing the Workload Unit (w/ Flywheel) (1)

■ Removing the Workload Unit

1. Remove the crank pulley 1-A set and the timing belt.

   Reference: See the Items 1 to 4 in Section MS-1 "Replacing the Workload Unit (w/o Flywheel) (1)."

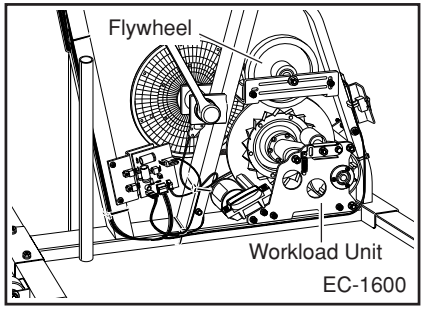
2. Loosen the flywheel fixing nut which is fixed to the flywheel metal base. (Fig. 1)

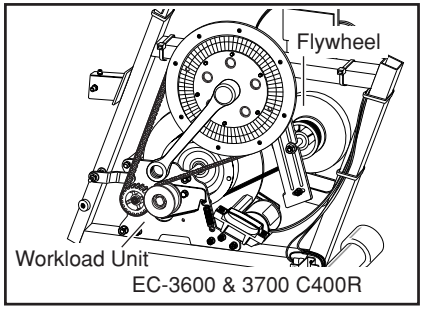
3. Remove the four bolts which fix the flywheel metal base, and remove the plain belt. (Fig. 2)

   Caution: Be careful that your hands are not injured by the copper disk plate. Be careful not to bend or damage the plate.

4. Remove the workload unit.

   Reference: See the Items 5 to 6 in Section MS-1 "Replacing the Workload Unit (w/o Flywheel) (1)."





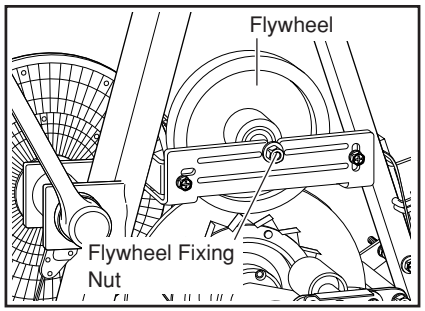


Fig. 1

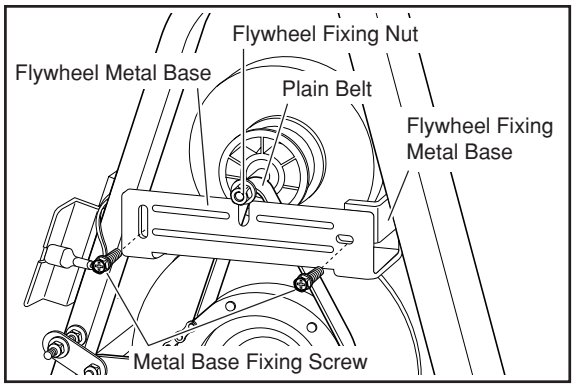


Fig. 2

MS-2 Replacing the Workload Unit (w/ Flywheel) (2)

■ Mounting the brand new Workload Unit

1. Assemble the brand new workload unit so that it will engage with the workload unit mounting metal base of the frame (Fig. 1).

   Reference > See the Item 1 of the Section MS-1 "Replacing the Workload Unit (w/o flywheel) (2)."

2. Hang the plain belt on the flywheel, and fix it to the flywheel metal base with the flywheel fixing nut.
3. Provisionally fasten the metal base fixing screw (4 pieces) to the flywheel fixing metal base and the frame respectively. (Fig. 2)
4. Install the workload unit.

   Reference > See the Items 2 to 8 in Section MS-1 "Replacing the Workload Unit (w/o Flywheel) (2)."

■ Adjusting the Flywheel

1. Adjust the flywheel.

   Reference > See the Section MS-3 "Adjusting the Flywheel."

MS-3 Adjusting the Flywheel

■ Adjustment Method of Flywheel

Since the plain belt which delivers the rotation of both the workload unit and flywheel requires an adequate tension, a specified tension should be given to the plain belt in the following adjustment procedures. For this adjustment, a commonly available spring scale.

1. Set a heavy gauge wire around the flywheel metal base as depicted in Fig. 1, and tie up the both ends outside the frame.
2. Hang a commercial spring scale at the top of the wire thus tied up, and lift the scale upward with a pulling force of 5 to 6 kg.
3. Keeping this status, fully tighten the four metal base fixing screws which had been fastened provisionally. (Fig. 2)

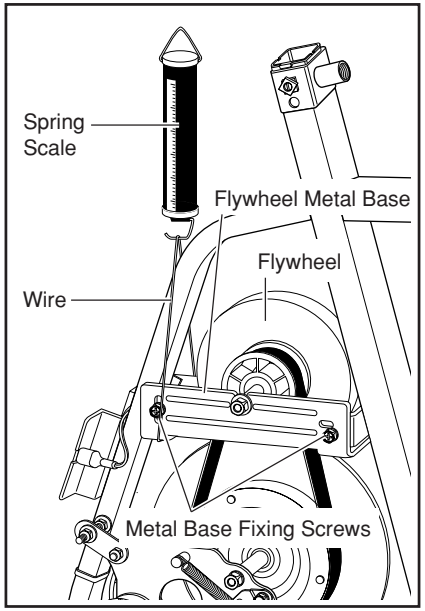


Fig. 1

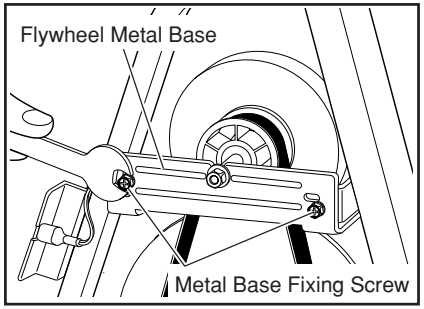


Fig. 2

MS-4 Replacing the Timing Belt (1)

1. Remove the frame cover.

   Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Remove the eight fixing screws and then remove the pulley flange. (Fig.1)
3. Remove the timing belt at the upper part of the crank pulley 1-A set first, and then rotate the crank forward to remove the entire timing belt. (Fig.2)
4. Removing idler spring A from the pawl of the idler A set will allow the entire timing belt to be removed. (Fig.3)
5. Install a brand new belt on the on pulley 1-B. (Fig.4)
6. Position idler spring A on the pawl of the idler A set. (Fig.3)

   Caution Be careful that the end of the spring does not injure your hands.

7. Position the timing belt on the crank pulley 1-A set.

   A forward rotation of the pulley 1-A set allows the timing belt to be set correctly. (Fig.5)

   Caution Be careful not to pinch your fingers between the timing belt and the crank pulley 1-A set.

8. Secure the flange of the pulley with the fixing screws.

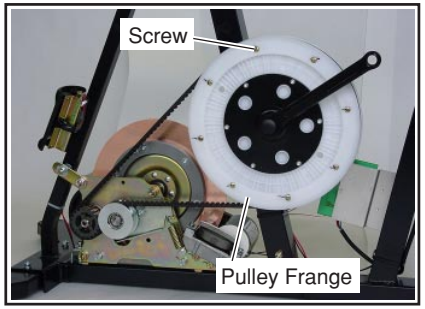


Fig. 1

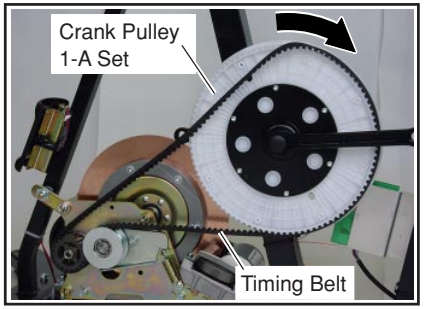


Fig. 2

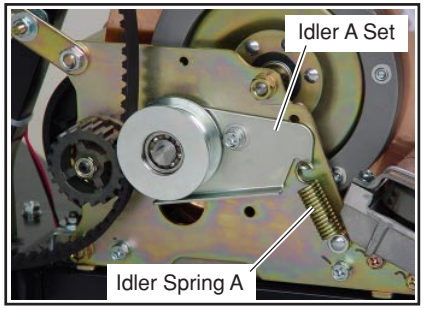


Fig. 3

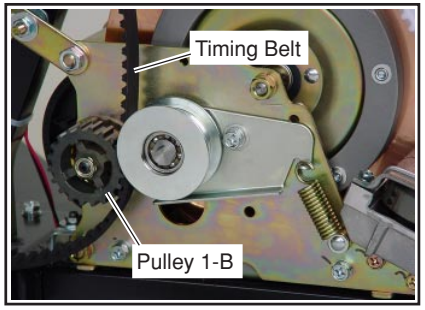


Fig. 4

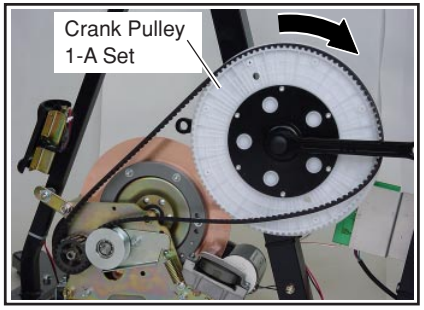


Fig. 5

MS-4 Replacing the Timing Belt (2)

9. Adjust the tension of the timing belt.
   To carry out adjustment, loosen the workload unit fixing screw and adjust the tension while sliding the unit back and forth. (Fig.6)

   Caution Be careful that the belt is not too tight.
   Be careful not to injure your hands with the copper disk plate.
   Be careful not to bend or damage the plate.

10. Assemble the frame cover.

    Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

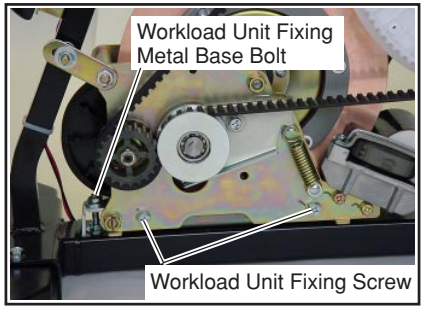


Fig. 6

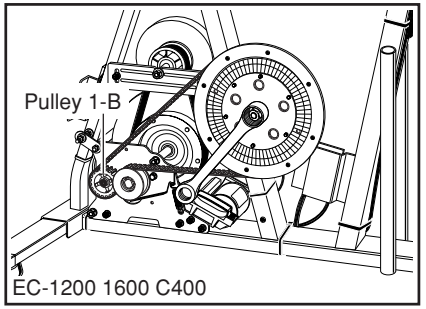
MS-5 Replacing the Pulley 1-B Set

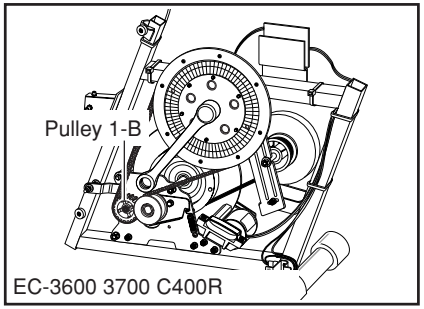
1. Detach the timing Belt.

   Reference See the Section MS-4 "Replacing the Timing Belt."

2. Hold the D-cut section on the pulley 1-B shaft with a No.13 wrench, and remove the hexagon U-nut. Then, pull off the pulley 1-B set by using a pulley 1-B remover. (Figs. 1 & 2)
3. Mount the brand new pulley 1-B set, and firmly tighten the hexagon nut. Tightening should be done while holding the D-cut section with a No.13 wrench. (Fig. 1)
4. Install the timing belt.

   Reference See the Section MS-4 "Replacing the Timing Belt."





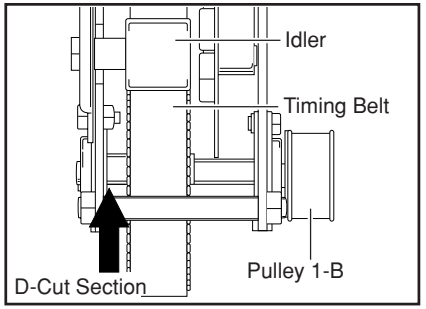


Fig. 1

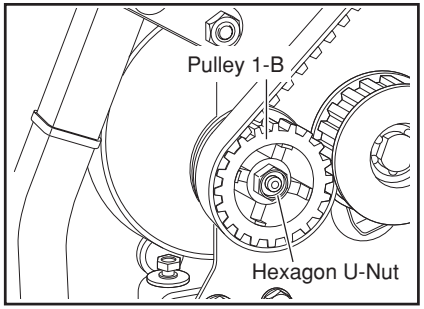


Fig. 2

MS-6 Replacing the Idler A Set

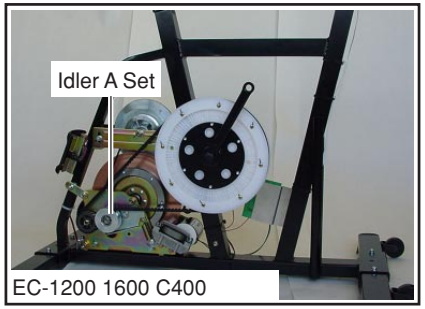
1. Remove the screw of the crank pulley 1-A set to remove the pulley flange. (Fig.1)
2. Remove the timing belt at the upper part of the crank pulley 1-A set first, and then rotate the crank forward to remove the entire belt. (Fig.2)
3. Remove idler spring A from the pawl of the idler A set. (Fig.3)
4. Remove the idler fixing bolt of the idler A set to remove the idler A set. (Fig.4)
5. Mount the brand new idler A set with idler fixing bolt.
6. Position idler spring A on the pawl of the idler A set.

   Caution Be careful that the end of the spring does not injure your hands.

7. Position the timing belt on the pulley 1-A set. Rotate the pulley set forward to set the belt.

   Caution Be careful not to pinch your fingers between the timing belt and crank pulley 1-A set.

8. Mount the pulley flange with screws.



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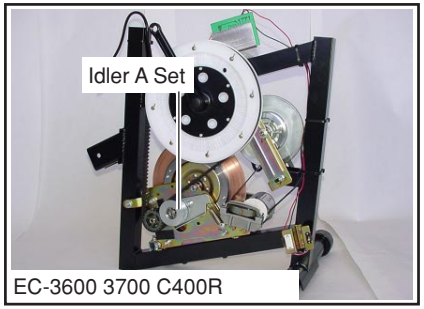

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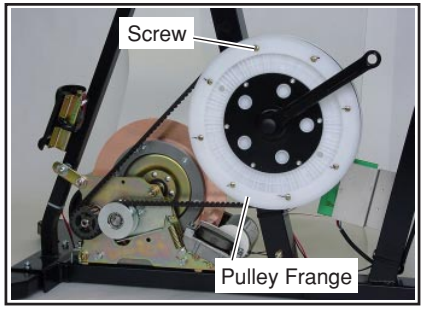


Fig. 1

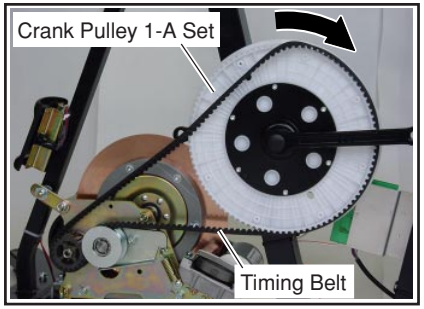


Fig. 2

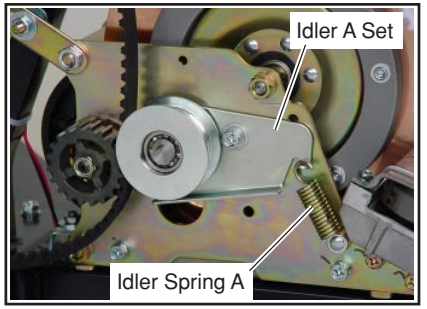


Fig. 3

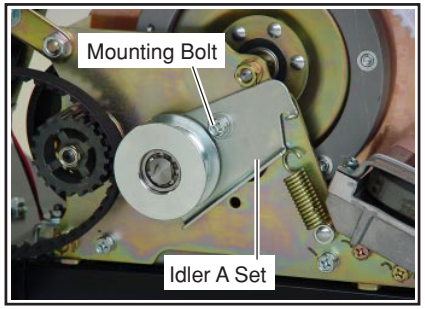


Fig. 4

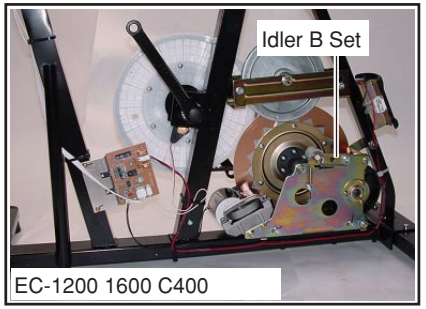
MS-7 Replacing the Idler B Set

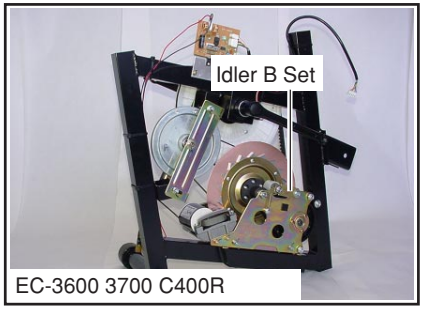
1. Remove the frame cover.

   Reference See the sections D-1 & D-2 "Removing the Frame Covers."

2. Remove the idler B spring from the pawl of the idler metal base. (Fig. 1)
3. Loosen the idler B mounting bolts, and detach the idler B set. (Fig. 2)
4. Mount a brand new idler B set by using an idler mounting bolt.
5. Hang the idler B spring on the pawl of the idler to give tension to the belt.

   Caution Be careful that the end of the spring does not injure your hands.





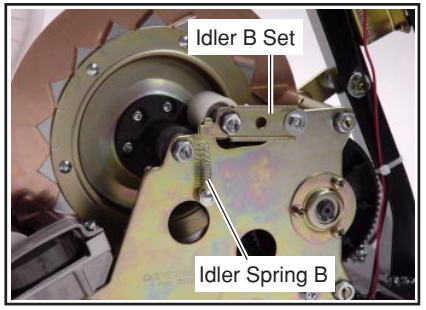


Fig. 1

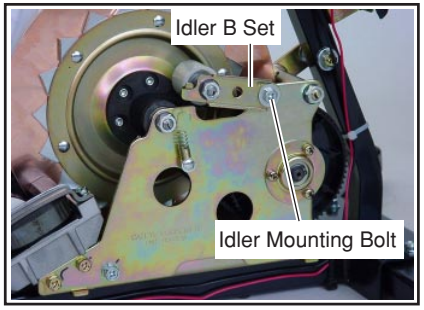


Fig. 2

MS-8 Replacing the Crank Pulley 1-A Set (1)

■ Removing the CrankPulley 1-A Set

1. Remove the frame cover.

   Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Detach the timing belt.

   Reference See the Section MS-4 "Replacing the Timing Belt."

3. Insert a flat had driver into the groove of the crank cap to remove the crank cap. (Fig.2)
4. Use a cotterless gear crank removing/fastening tool and a wrench, rotate the crank bolt to remove it. (Fig. 3)
5. Change the sides of a cotterless gear crank removing/fastening tool, and rotate it clockwise to remove the crank pulley 1-A set from the crank shaft. (Fig. 4)

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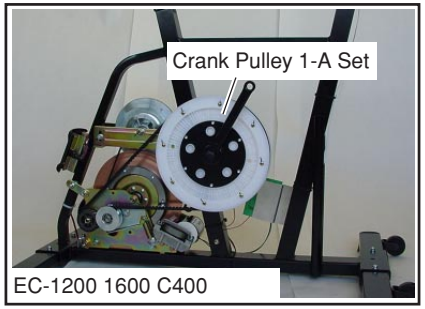

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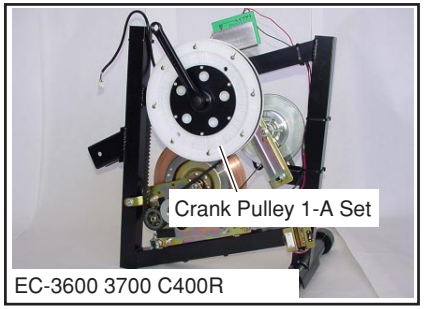

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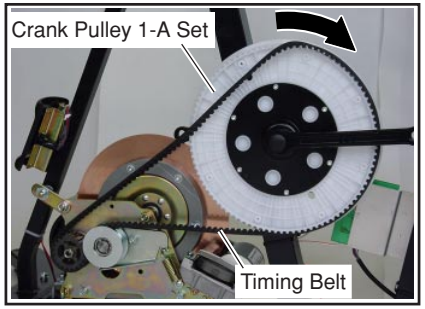


Fig. 1

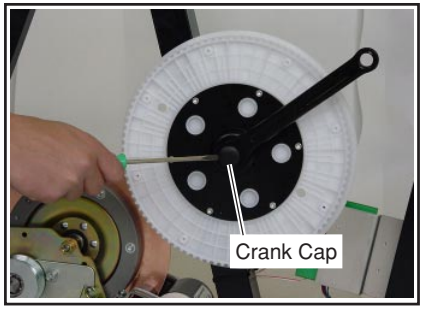


Fig. 2

Fig. 3

Fig. 4

MS-8 Replacing the Crank Pulley 1-A Set (2)

■ Assembling the Crank Pulley 1-A Set

1. Mount the gear crank (crank) to the crank shaft.
2. Securely fasten the crank bolt by using a socket wrench (or by a cotterless gear crank removing/fastening tool and a wrench). (Figs. 1 & 2)

   Caution Each of the cranks should be positioned relative to each other to form an angle of 180 °against the gear. (Fig.3)
3. Clamp the crank cap.
4. The timing belt should be first positioned on pulley 1-B and then on the upper part of the crank pulley 1-A set. A forward rotation of the crank will allow the belt to be set correctly (Fig.4)

   Caution Be careful not to pinch your fingers between the timing belt and crank pulley 1-A set.
5. Mount the pulley flange with screws.
6. Adjust the tension of the timing belt.
   To carry out adjustment, loosen the screws of the workload unit (four points, at the right and left) as well as the bolt which secures the metal base, and then adjust the tension while sliding the unit back and forth. (Fig.5)

   Caution Be careful that the timing belt is not too tight.
   Be careful not to injure your hands with the copper disk plate.
   Be careful not to bend or damage the plate.

Fig. 1

Fig. 2

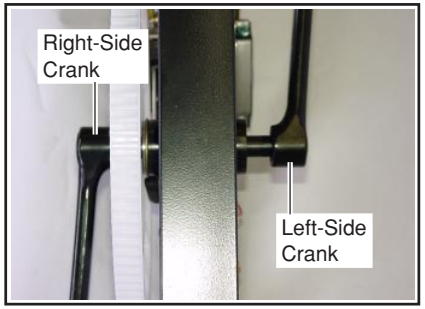


Fig. 3

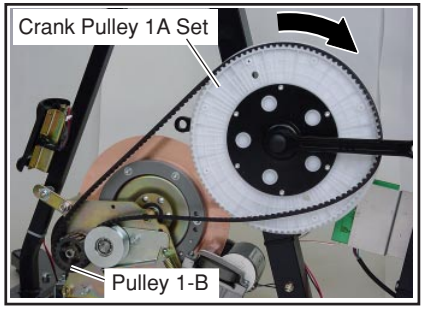


Fig. 4

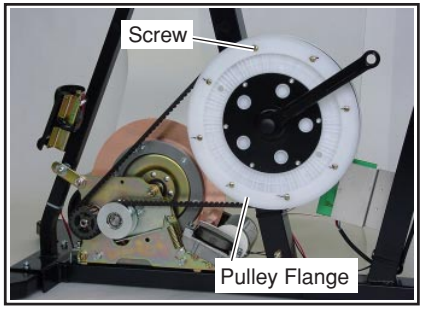


Fig. 5

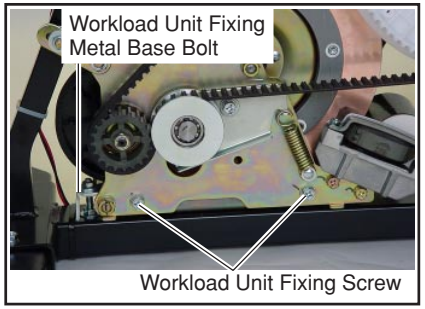


Fig. 6

MS-8 Replacing the Crank Pulley 1-A Set (3)

7. Adjust the clearance between the magnet mounted on the large gear and the CDC sensor, and also adjust the positions of the sensing lines.

   Reference > See the Item (5) of Section ES-5 "Replacing the CDC Sensor (1)."

8. Turn on the power temporarily, and check whether or not the pedal cadence is displayed on the control unit.

9. Reassemble the frame cover.

   Reference > See the Sections D-1 and D-2 "Removing the Frame Covers."

MS-9 Replacing the Cartridge BB Set (1)

■ REMOVAL

1. Remove the frame cover.

   Reference See the Sections D-1 & D-2 "Removing the Frame Covers."

2. Remove the crank pulley 1-A set from the crank shaft (BB Axle).

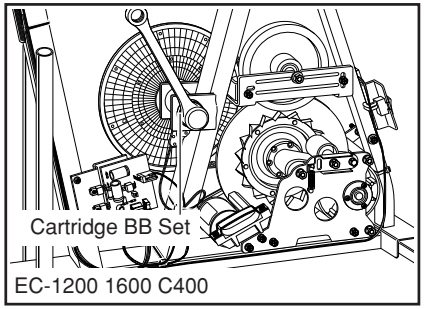
   Reference See the Section MS-8 "Replacing the Crank Pulley 1-A Set."

3. Remove the cartridge BB from the left side using a cartridge BB removing tool and a wrench. (Fig.1)

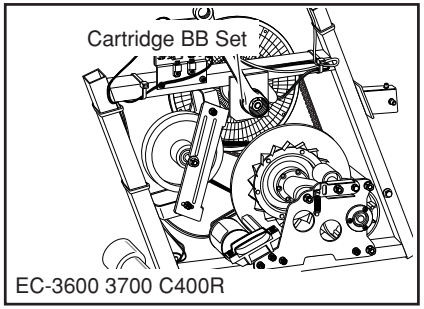
   Reference Cartridge BB Removing Tool (SHIMANO TL-UN74S/BB)

4. Remove the BB fixing cup using a cartridge BB removing tool and a wrench. (Fig.2)
   The CDC sensor (metal base) will be removed at the same time.

   Caution The BB fixing cup is a left winding screw. To loosen the screw, turn it to the right.



EC-1200 1600 C400



EC-3600 3700 C400R

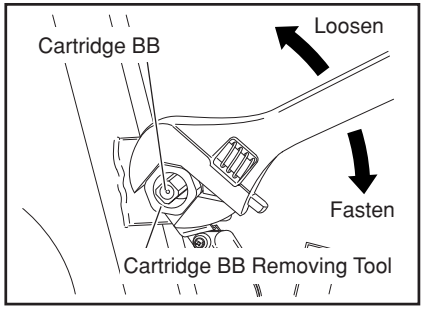


Fig. 1

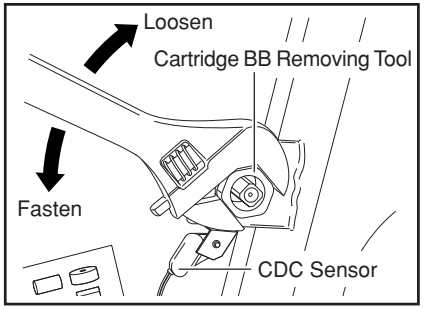


Fig. 2

MS-9 Replacing the BB Set (2)

■ ASSEMBLING

1. Install the right BB fixing cup. Be sure to install the CDC sensor metal base first, before then installing the fixing cup.
2. Mount cartridge BB. The tightening torque is 400kg/cm.
3. Install the crank pulley 1-A set.

   Reference > See the Section MS-8 "Replacing the Crank Pulley 1-A Set."
4. Adjust the clearance between the CDC sensor surface and the magnet surface to be approx. 2mm. (Fig. 3)

   Reference > When the specified clearance has not been established, bend the metal base to have the clearance.
5. Turn on the power temporarily, and check whether or not the pedal cadence is displayed on the control unit.
6. Reassemble the frame cover.

   Reference > See the Sections D-1& D-2 "Removing the Frame Covers."

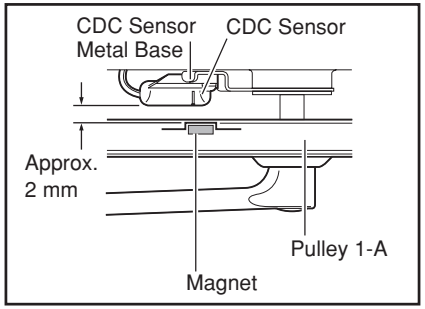


Fig. 3

MS-10 Replacing the Post Spacer

■ REMOVAL

1. Remove the center cover, by referring to the Section MS-19 "Replacing the Center Cover of Upright Type."
2. Remove the lock nut located at the side of the frame, and then remove the adjust screw. (Fig. 1)
3. Pull out the spacer spring. (Fig. 1)
4. The post spacer can be pulled out upward while the boss at the side of the post is being pressed in with a screwdriver (for both right and left sides). (Fig. 2)

■ ASSEMBLING

1. Insert a brand new post spacer.
2. Insert the spacer spring, and slightly fasten the adjust screw. (Fig. 3)
3. Insert the seat post (handleber post), and adjust the adjust screw so that the post will drop slowly.
4. Fasten the lock nut to lock the adjust screw.
5. Assemble the center cover, by referring to the Section MS-19 "Replacing the Center Cover of Upright Type."

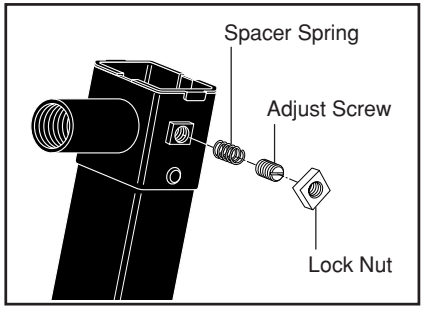


Fig. 1

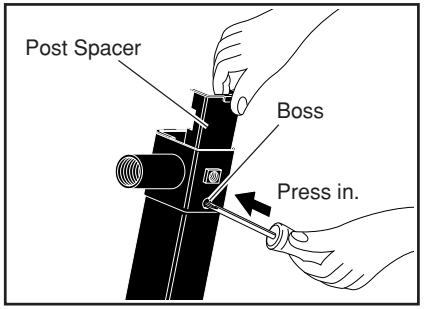


Fig. 2

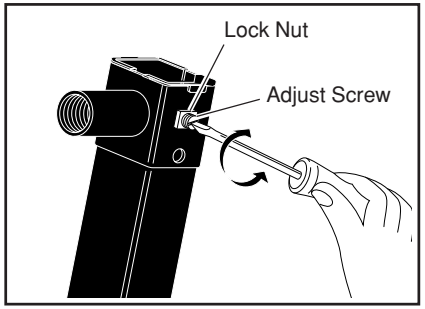


Fig. 3

MS-11 Adjusting the Spacer Spring

1. Remove the center cover, by referring to the Section MS-19 "Replacing the Center Cover of Upright Type."
2. Slightly loosen the lock nut at the side of the frame. (Fig. 1)
3. Fasten the adjust screw so that the seat post will drop slowly.
4. Fasten the lock nut to fix the adjust screw.
5. Assemble the center cover, by referring to the Section MS-19 "Replacing the Center Cover of Upright Type."

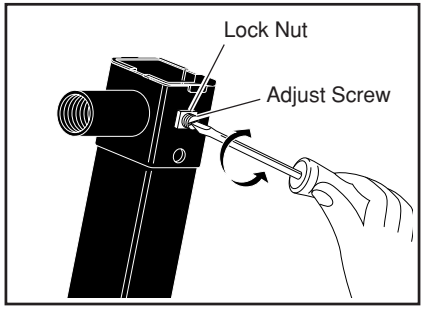


Fig. 1

MS-12 Replacing the Inner Pipe Spacer

■ REMOVAL

1. Slide the seat pipe to the utmost back end, and set it at a position where the screw head can be seen through the hole on the top surface of the seat pipe.
2. Remove the stopper screw. (Fig. 1)
3. Pull out the seat pipe and the inner pipe spacer A, while depressing the two bosses, located at the right and left sides of the seat pipe, at the same time. (Fig. 2)

   Caution Pulling out the inner pipe will make the machine unstable. As they are heavy, be sure that two persons work together to carry the units.
4. Remove the spacer B at the end of the inner pipe. (Fig. 3)

■ ASSEMBLING

1. Set a brand new inner pipe spacer B into the seat pipe. (Fig. 4)

   Caution When installing each unit, be careful not to compact or kink the cord of the pulse sensor.
2. Insert the inner pipe spacer A and B together into the seat pipe.
3. Align the hole on the top surface of the seat pipe with the screw hole, and apply the stopper screw. (Fig. 1)

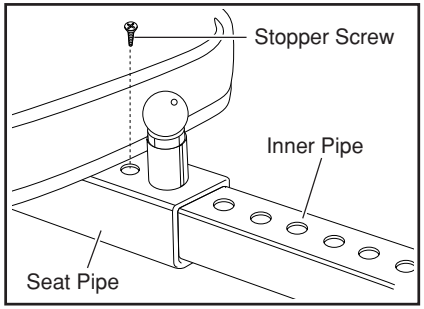


Fig. 1

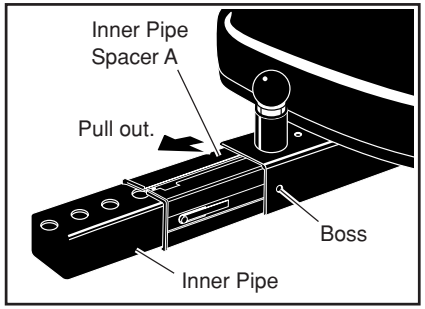


Fig. 2

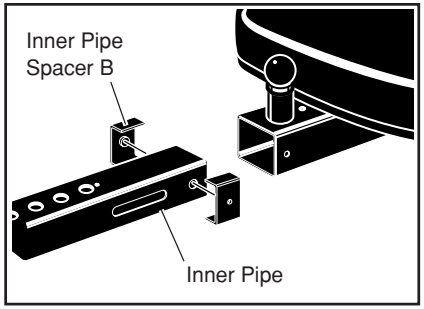


Fig. 3

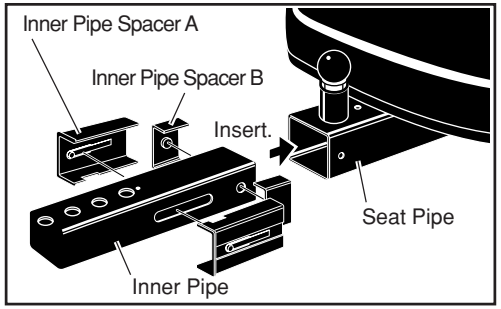


Fig. 4

MS-13 Replacing the Vertical Pipe Spacer

1. Remove the seat height lock knob, and pull out the rear support pipe. (Fig. 1)

   Caution When holding the main body of the unit, be careful when pulling out the seat height locking knob.

2. Remove the rear support pipe spacer at the rear support pipe insertion area on the top surface of the seat pipe. The rear support pipe spacer is fixed on the pipe with an adhesive tape.
3. Apply and set a brand new rear support pipe spacer with an adhesive tape. (Fig. 2)
4. Insert the rear support pipe, and fix it with the seat height lock knob.

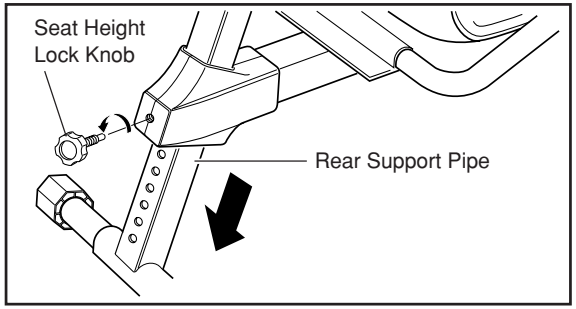


Fig. 1

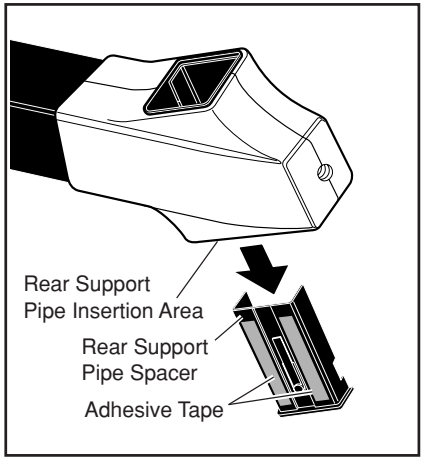


Fig. 2

MS-14 Replacing the Leg Cover

■ REMOVAL

1. Remove the leg pipe from the main body. Also, remove the leveling knob. (Fig. 1)
2. Apply a screwdriver or the like to the damaged leg cover, and knock the cover off, paying attention not to damage the caster. (Fig. 2)

■ ASSEMBLING

1. Set the leg cover onto the leg, and hammer it in. The use of a wood block is recommended as a buffer. (Fig. 3)
   * A direct hammering of the leg cover may damage the leg cover.
2. Mount the leveling knob and assemble it to the frame.

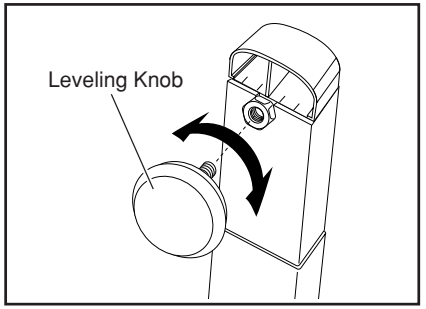


Fig. 1

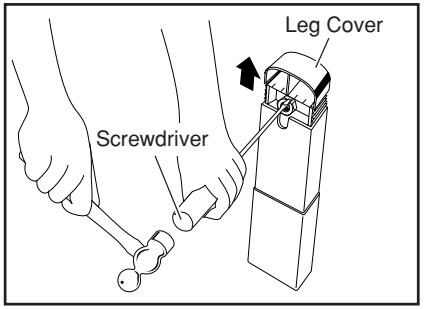


Fig. 2

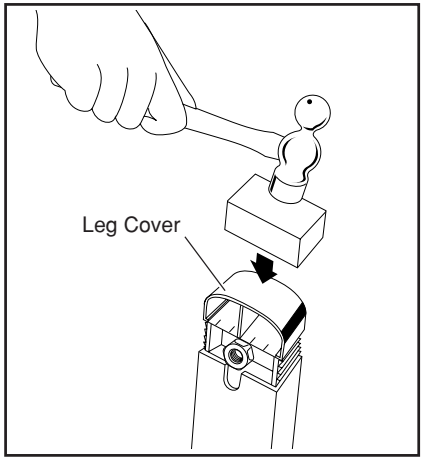


Fig. 3

MS-15 Replacing the Caster and Level Adjuster

1. Loosen the screw and remove the front leg with casters (rear leg with level adjuster) from the main unit (leg).
2. The caster (level adjuster) has been press-fitted into the front leg with casters (rear leg with level adjuster). It can be removed by hammering it through a wooden block. (Fig. 1)
3. Press fit a brand new caster (level adjuster) with a hammer and a wood block. (Fig. 2)
4. Mount the front leg with casters (rear leg with level adjuster) to the main unit (leg).

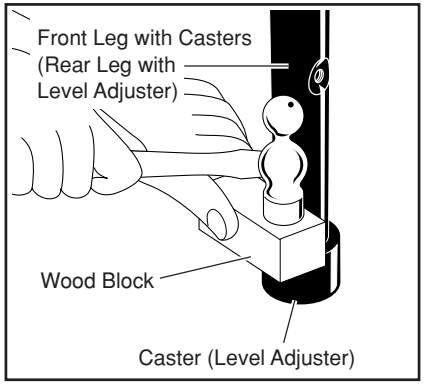


Fig. 1

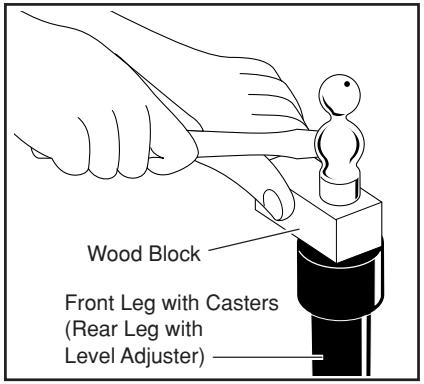


Fig. 2

MS-16 Replacing the Seat Post Knob

1. Pull out the seat post.
2. Remove the seat post knob by rotating and loosening the guide screw in the counter-clockwise direction.
3. Mount a brand new seat post knob by securely tightening the guide screw.
4. Insert the seat post.

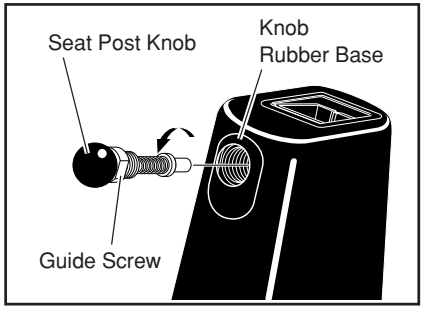


Fig. 1

MS-17 Replacing the Lock Pin

1. Remove the lock pin by rotating and loosening the guide screw in the counter-clockwise direction.
2. Mount a brand new lock pin by securely tightening the guide screw.

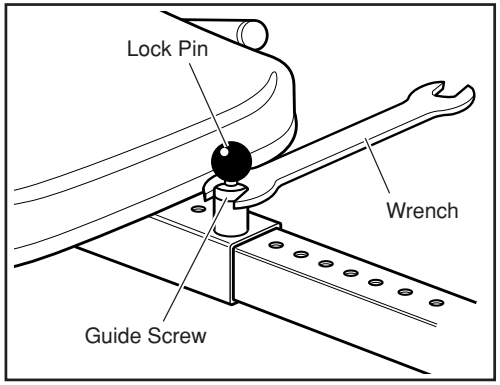


Fig. 1

MS-18 Replacing the Crank Cover

■ REMOVAL

1. Remove both right and left pedals. (Fig. 1)
2. Loosen and remove the fixing screw on the surface of the crank cover. The narrow-width area of the crank cover should position in between the frame cover and the crank. (Figs 2 & 3)

■ ASSEMBLING

1. Pass the crank through the hole on the crank cover, and fix the crank cover onto the frame cover with screws. (Figs. 2 & 3)
2. Set the right and left pedals.

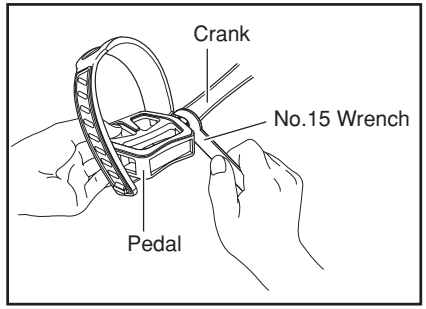


Fig. 1

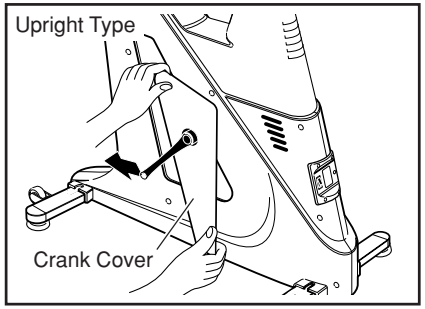


Fig. 2

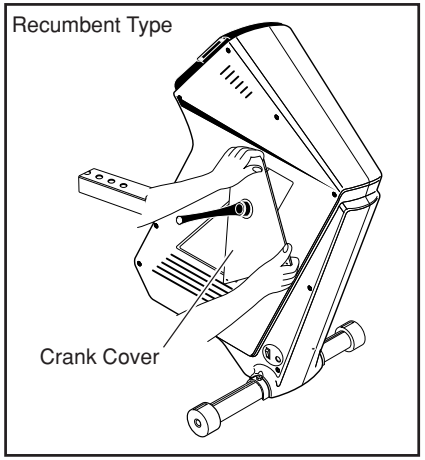


Fig. 3

MS-19 Replacing the Center Cover of Upright Type

1. Loosen the four screws on the bottom of the control unit, remove the control unit, and then detach the cable connector. (Fig. 1)
2. For EC-1600, slide the inner pipe of the handlebar post cover upward, and detach the 5P cable connector (Fig. 2). For EC-1200, remove the cable holder from the handlebar post.
3. Loosen the handlebar post knob, and pull out the handlebar post from the main unit. (Fig. 3)
4. Pull the seat post knob upward, and pull out the seat post from the main unit. (Fig. 4)
5. Loosen and remove the guide screw of the seat post knob. (Fig. 5)
6. Remove the rubber base of the seat post knob. (Fig. 6)
7. Slightly loosen the center cover fixing screws (6 pieces), and remove the center cover by pulling it upward. (Fig. 7)
8. The assembling of the center cover can be made in the procedures opposite to the above.

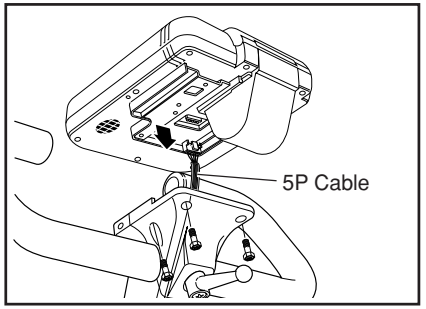


Fig. 1

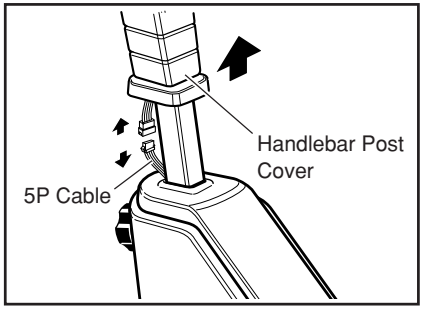


Fig. 2

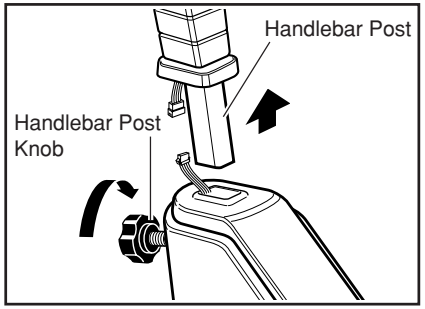


Fig. 3

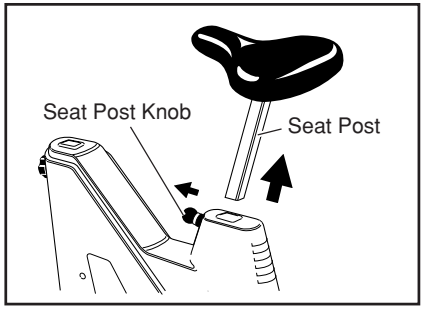


Fig. 4

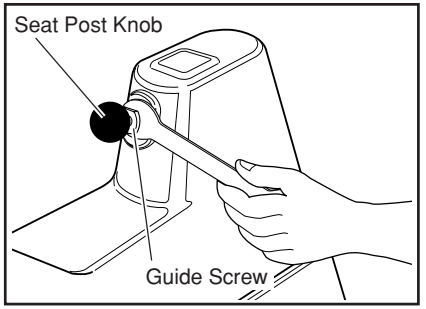


Fig. 5

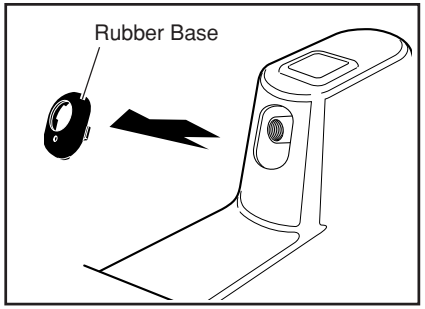


Fig. 6

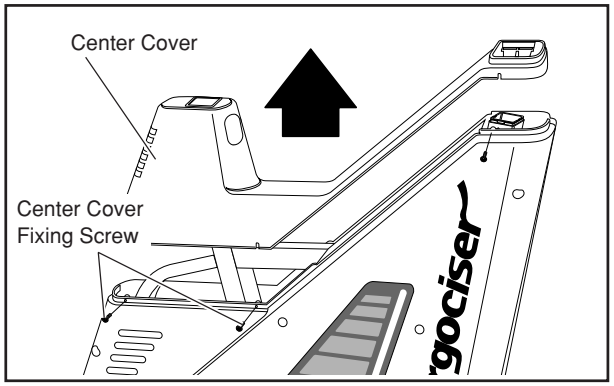


Fig. 7

MS-20 Replacing the Center Cover of Recumbent Type

* Remove the pulse rate sensor, if it is connected, before proceeding to the following procedures.

1. Remove the control unit fixing screws (4 pieces) from the main unit. (Fig. 1)
2. Detach the cable connector from the control unit. (Fig. 2)
3. Loosen and remove the inner pipe from the joint metal base. (Fig. 3)

Caution Pulling out the inner pipe will make the machine unstable. As they are heavy, be sure that two persons work together to carry the units.

4. Remove the frame cover fixing screws, and the frame cover will be separated into right and left parts. (Fig. 4)
5. Remove the latch of the center cover from the frame cover, and pull the center cover toward the joint metal base to remove it. (Fig. 5)
6. Assembling of the center cover can be performed in reversed procedure of the above.

Caution When installing each unit, be careful not to compact or kink the cord of the pulse sensor.
Pull the 5P cable connector through the hole in the center cover and secure it provisionally with adhesive tape to prevent it from retracting. (Fig.5)

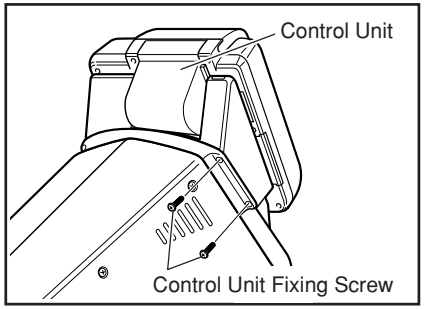


Fig. 1

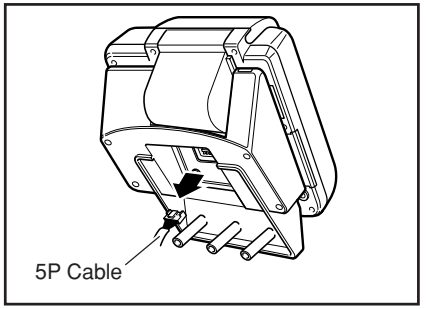


Fig. 2

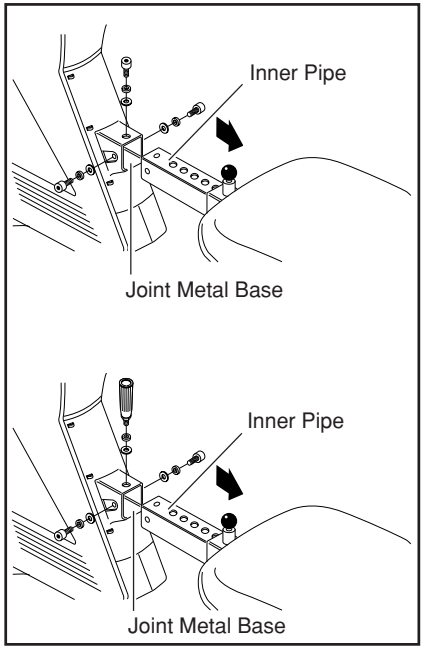


Fig. 3

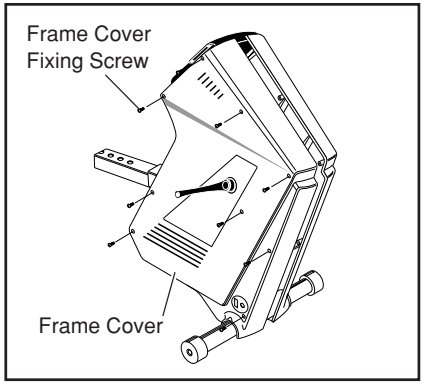


Fig. 4

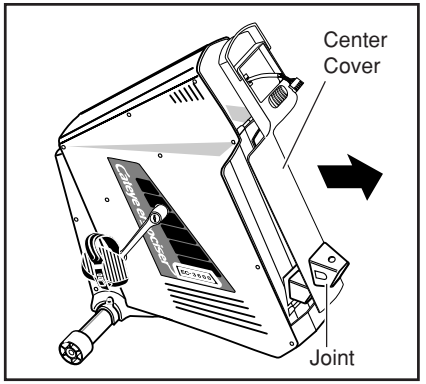


Fig. 5

MS-21 Replacing the Handlebar Grip

1. In case the handlebar grip is damaged, cut the grip with a thin cutting knife and peel it off the handlebar. (Fig. 1)

   Caution Be careful that the blade of the cutter does not cause injury.

2. Fit a brand new handlebar grip onto the handlebar, utilizing compressed air from a compressor, etc. Press the grip into the handlebar while applying compressed air at one end. (Fig. 2)

   * When a compressor is not available, apply a soap water on the handlebar, and insert the grip while twisting and pressing the grip.
   * When the above replacing work is difficult to achieve, remove the handlebar before the work.

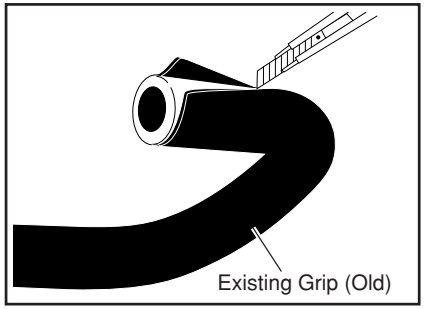


Fig. 1

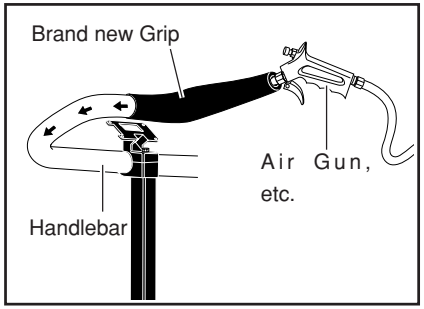


Fig. 2

MS-22 Replacing the Printer Cover

1. Remove the control unit to separate upper and lower bodies.

   Reference See the Items (1 & 2) in Section ES-6 "Replacing the Panel Keyboard."

2. Detach the existing printer cover, and mount the brand new printer cover.

3. Bring the upper and lower body together and assemble the control unit as one main unit.

   Reference See the Items (8 & 9) in Section ES-6 "Replacing the Panel Keyboard."

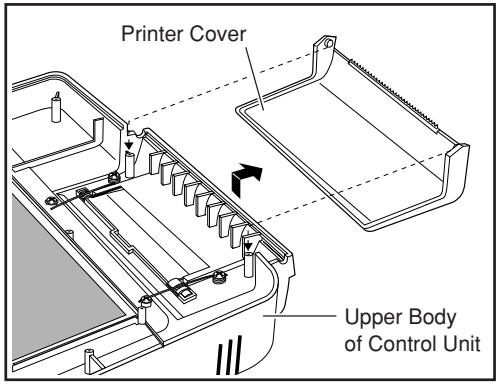


Fig. 1

MS-23 Replacing the Paper Cutter

1. Remove the control to separate upper and lower bodies.

   Reference See the Items (1 & 2) in Section ES-6 "Replacing the Panel Keyboard."

2. Loosen and remove four screws. Also, remove the spring. (Fig. 1)

3. Remove the existing printer cutter, and mount a brand new paper cutter.

   Caution Be careful that the paper cutter does not cause injury.

4. Set the spring so that it will fit into the groove of the paper cutter, and fix it with four screws.

5. Bring the upper and lower body together and assemble the control unit as one main unit.

   Reference See the Items (9 & 10) in Section ES-6 "Replacing the Panel Keyboard."

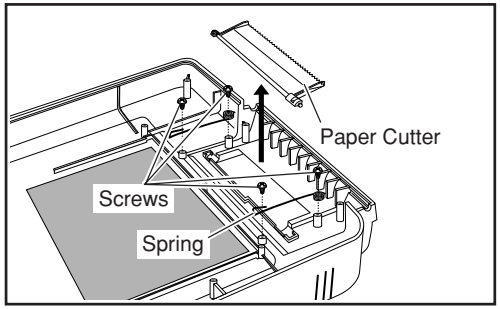


Fig. 1

MS-24 Replacing the Handle Stem

1. Turn off the power, loosen the four screws of the handle stem and then remove the control unit. (Fig.1)
2. Remove the cable connector linked to the rear of the control unit. (Fig.1)
3. Leave the handlebar lever loose. (Fig.1)
4. Loosen the bolt and pull the handle stem out from the main unit. (Fig. 2)

   Caution Be careful not to remove the bolt completely.
5. Install a brand new handle stem and fasten the bolt.
6. Carry out the steps above in reverse order to reassemble handle stem.

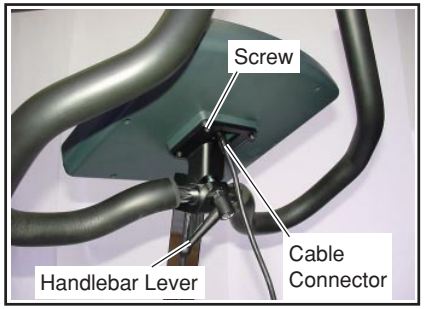


Fig. 1

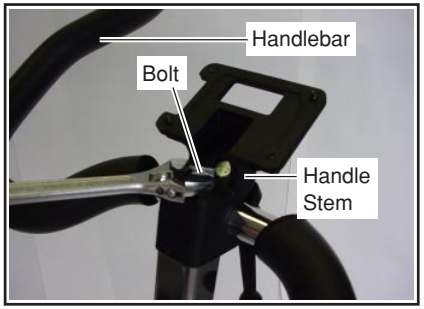
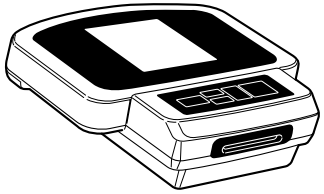
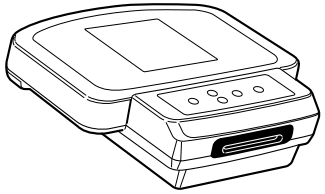


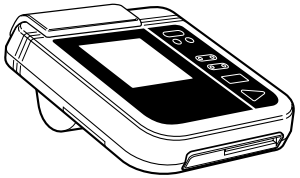
Fig. 2



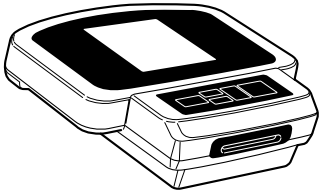
PNR.780-6100 EC-1200 Control Unit(J) Ivory
PNR.780-6101 EC-1200 Control Unit(E) Ivory
PNR.780-6106 EC-1200 Control Unit(E) Black
PNR.780-6102 EC-1200 Control Unit(G) Ivory
PNR.780-6107 EC-1200 Control Unit(G) Black
Unit: pieces



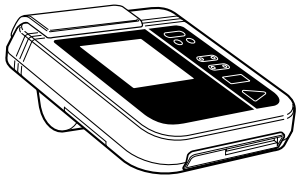
PNR.780-6108 EC-1200 Control Unit Multi Ivory
PNR.780-6109 EC-1200 Control Unit Multi Black
unit: pieces



PNR.781-6500 EC-1600 Control Unit(J) Ivory
PNR.781-6501 EC-1600 Control Unit(E) Ivory
PNR.781-6506 EC-1600 Control Unit(E) Black
PNR.781-6502 EC-1600 Control Unit(G) Ivory
PNR.781-6507 EC-1600 Control Unit(G) Black
unit: pieces

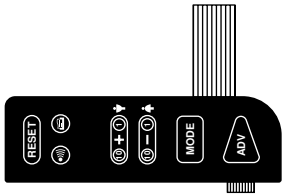


PNR.781-5600 EC-3600 Control Unit(J)
PNR.781-5601 EC-3600 Control Unit(E)
PNR.781-5602 EC-3600 Control Unit(G)
unit: pieces

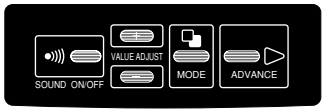


PNR.781-5900 EC-3700 Control Unit(J) Ivory
PNR.781-5901 EC-3700 Control Unit(E) Ivory
PNR.781-5916 EC-3700 Control Unit(E) Black
PNR.781-5902 EC-3700 Control Unit(G) Ivory
PNR.781-5917 EC-3700 Control Unit(G) Black
unit: pieces

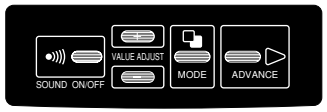
PNR.080-6701 EC-C400 Control Unit(J)
PNR.080-6702 EC-C400 Control Unit(E)
PNR.080-6703 EC-C400 Control Unit(G)
unit: pieces



PNR.780-5160 EC-1600/3700 Panel Keybord
unit: sets

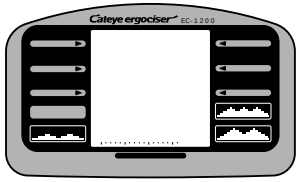


PNR.780-6121 EC-1200 Button Panel(J)
PNR.780-6120 EC-1200 Button Panel(E)
PNR.780-6122 EC-1200 Button Panel(G)
unit: sets

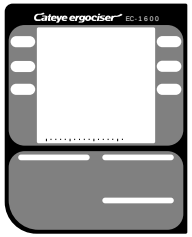


PNR.781-5610 EC-3600 Button Panel(J)
PNR.781-5611 EC-3600 Button Panel(E)
unit: sets

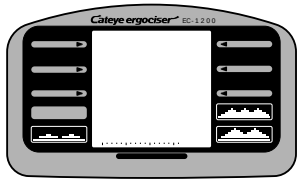
PNR.000-0000 EC-C400/C400R Button Panel(J)
PNR.022-5481 EC-C400/C400R Button Panel(E)
PNR.022-5482 EC-C400/C400R Button Panel(G)
unit: sets



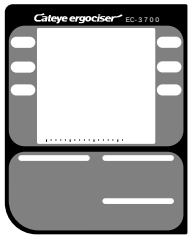
PNR.000-0000 EC-1200 Decal(J)
PNR.780-6061 EC-1200 Decal(E)
PNR.780-6062 EC-1200 Decal(G)
PNR.780-6063 EC-1200 Decal(F)
unit: sets



PNR.000-0000 EC-1600 Decal(J)
PNR.780-6561 EC-1600 Decal(E)
PNR.780-6562 EC-1600 Decal(G)
PNR.780-6563 EC-1600 Decal(F)
unit: sets

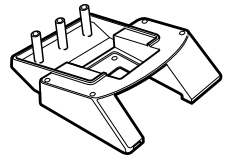


PNR.000-0000 EC-3600 Decal(J)
PNR.781-5631 EC-3600 Decal(E)
PNR.781-5632 EC-3600 Decal(G)
unit: sets

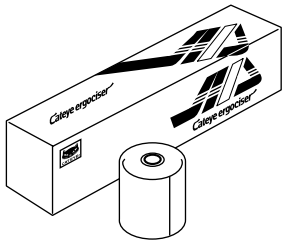


PNR.000-0000 EC-3700 Decal(J)
PNR.781-5921 EC-3700 Decal(E)
PNR.781-5922 EC-3700 Decal(G)
unit: sets

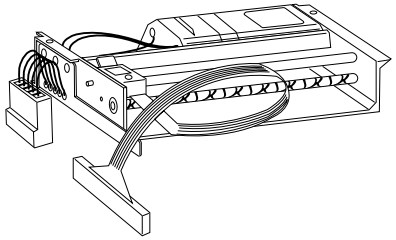
PNR.000-0000 EC-C400/C400R Decal(J)
PNR.022-5471 EC-C400/C400R Decal(E)
PNR.022-5472 EC-C400/C400R Decal(G)
unit: sets



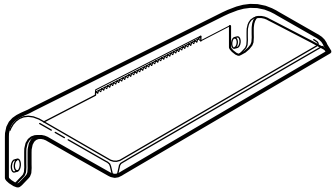
PNR.781-5930 EC-3700/C400R Unit Base
unit: pieces



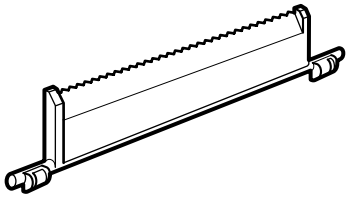
PNR.722-6501 Thermal Paper
unit: sets



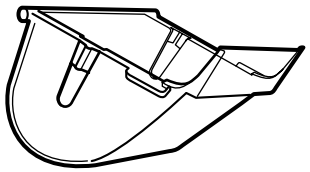
PNR.736-6000 EC-1600/3700 Printer Unit
unit: sets



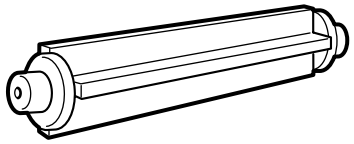
PNR.780-5111 EC-1600/3700 Printer Cover
unit: pieces



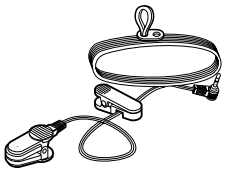
PNR.780-1031 EC-1600/3700 Paper Cutter
unit: pieces



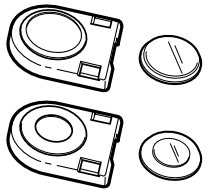
PNR.780-1020 Paper Case
unit: pieces



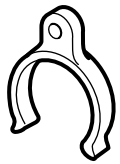
PNR.780-1030 Paper Roller
unit: pieces



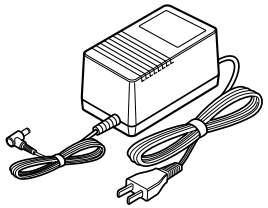
PNR.780-1100 EC-1200/1600 Pluse Sensor Set(1M)
PNR.780-1101 EC-3600/3700 Pluse Sensor Set(2M)
PNR.780-1102 EC-1200/1600 Pluse Sensor Set(1.5M)
unit: sets



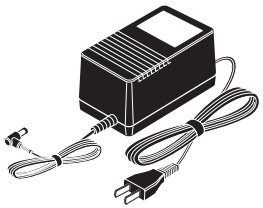
PNR.780-1110 Pluse Sensor Cover Set
unit: sets



PNR.780-1200 Sensor Clip
unit: pieces



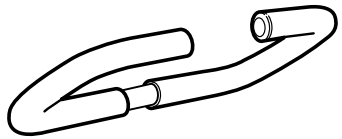
PNR.737-5500 AC Adapter (100V) J
PNR.737-5511 AC Adapter (120V) UL
PNR.737-5520 AC Adapter (220V) EC
PNR.737-5523 AC Adapter (240V) UK
unit: sets



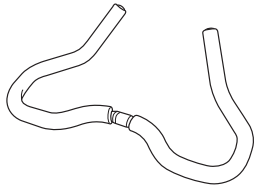
PNR.781-6140 AC Adapter (100V) J
PNR.781-6141 AC Adapter (120V) UL
PNR.781-6142 AC Adapter (240V) UK
PNR.781-6143 AC Adapter (220V) EC
(For EC-C400/C400R/5000)
unit: sets

PNR.781-9100 Saddle (SMP 1209)
unit: sets

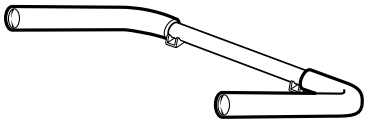
PNR.703-3101 EC-3600/3700 Recumbent Seat
unit: sets



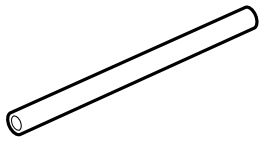
PNR.724-3410 EC-1200 Handlebar
PNR.780-6450 EC-1600 Handlebar
unit: pieces



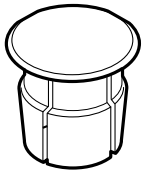
PNR.781-9000 EC-1200/1600 Handlebar Set
(HORN TYPE)
unit: pieces



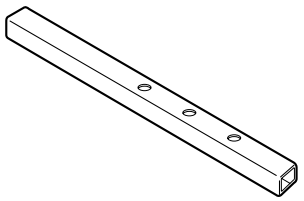
PNR.781-5130 EC-3600/3700 Handlebar
unit: pieces



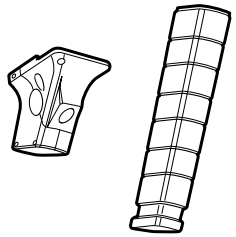
PNR.025-0030 EC-1200/1600 HORN TYPE
Handlebar Grip
PNR.725-0000 EC-1200 Handlebar Grip
PNR.780-6470 EC-1600 Handlebar Grip
PNR.781-5060 EC-3600/3700 Handlebar Grip
unit: pieces



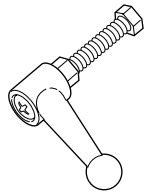
PNR.781-3200 Handlebar Cap
unit: pieces



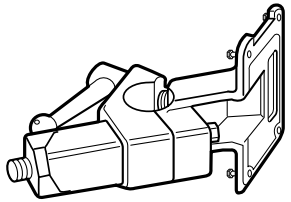
PNR.781-0210 EC-1200/1600 Handlebar Post
unit: pieces



PNR.780-6430 EC-1600 Handlebar Post Cover Set
unit: sets

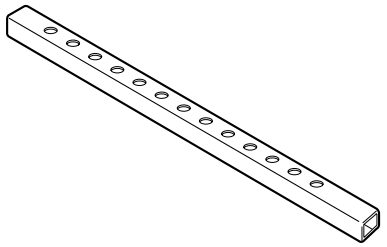


PNR.758-5000 EC-1200/1600 Handlebar Lever Set
unit: sets

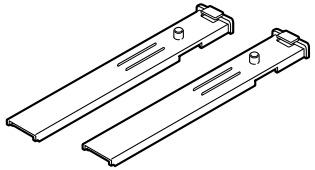


PNR.780-6170 EC-1200/1600 Handlebar Stem
unit: sets

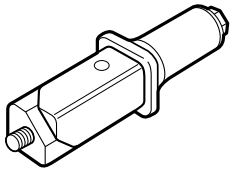
PNR.785-1416 Adjusting Knob/Seat Hite Lock Knob
unit: pieces



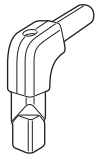
PNR.780-6190 EC-1200/1600 Seat Post
unit: pieces



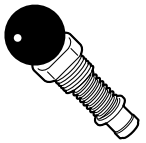
PNR.780-6050 EC-1200/1600 Post Spacer Set
unit: sets



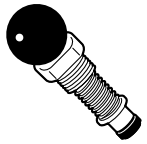
PNR.780-9610 EC-1200/1600 Seat Pillar
unit: pieces



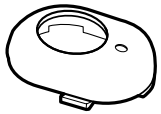
PNR.780-6260 EC-1200/1600/C400 New Seat Pillar
unit: pieces



PNR.785-1417 EC-1200/1600 Seat Post Knob
unit: pieces

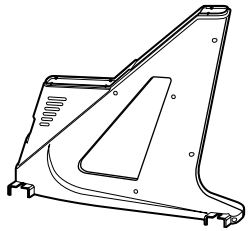


PNR.781-5120 EC-3600/3700 Lock Pin
unit: pieces

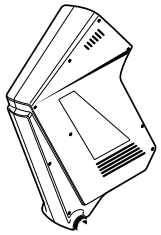


PNR.780-6040 EC-1200/1600 Rubber Base for Knob
unit: pieces

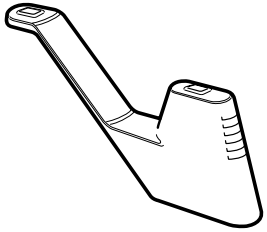
PNR.781-5300 EC-3700/3600/C400R Grip
unit: pieces



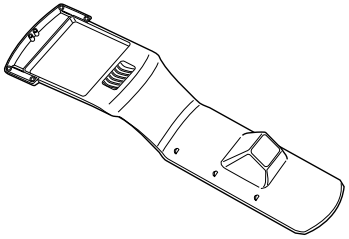
PNR.780-6000 EC-1200/1600 Frame Cover(L/R)Ivory
PNR.780-6001 EC-1200/1600 Frame Cover(L/R)Black
unit: sets



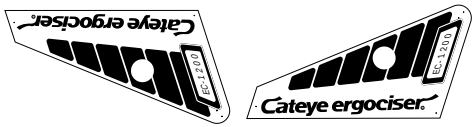
PNR.781-5000 EC-3600/3700 Frame Cover(L/R)Ivory
PNR.781-5001 EC-3600/3700 Frame Cover(L/R)Black
unit: sets



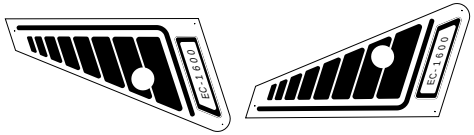
PNR.780-6010 EC-1200/1600 Center Cover
unit: pieces



PNR.781-5500 EC-3600/3700 Center Cover
unit: pieces



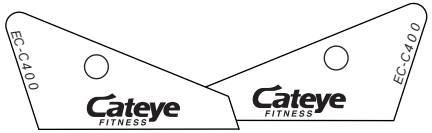
PNR.780-6020 EC-1200 Crank Cover(L,R) Set
unit: sets



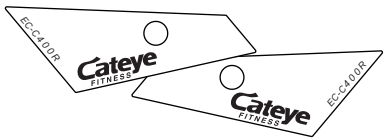
PNR.780-6420 EC-1600 Crank Cover(L,R) Set
unit: sets

PNR.781-5520 EC-3600 Crank Cover(L,R) Set
unit: sets

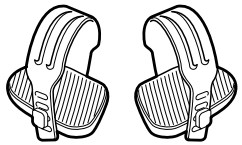
PNR.781-5810 EC-3700 Crank Cover(L,R) Set
unit: sets



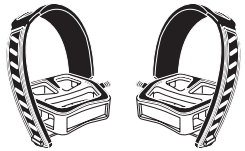
PNR.781-8100 EC-C400 Crank Cover(L,R) Set
unit: sets



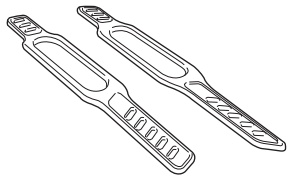
PNR.781-8110 EC-C400R Crank Cover(L,R) Set
unit: sets



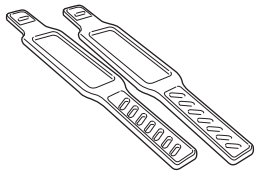
PNR.781-5100 Pedal(L,R)
unit: sets



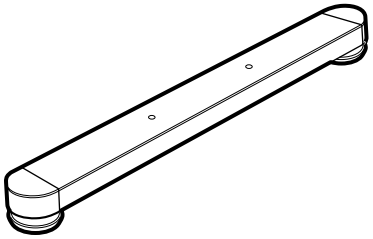
PNR.024-3700 Pedal Set (LU-214) L,R
unit: sets



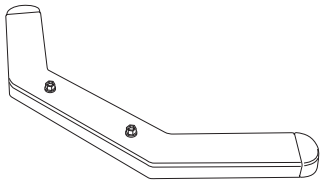
PNR.781-9300 Pedal Belt E-16 (L,R)
unit: sets



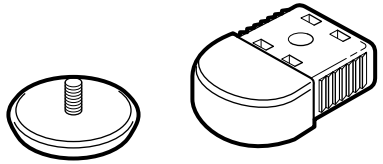
PNR.024-3710 Pedal Belt Set (LU-214) L,R
unit: sets



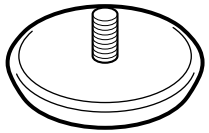
PNR.780-6160 EC-1200/1600 Rear Leg with Level Adjuster
unit: pieces



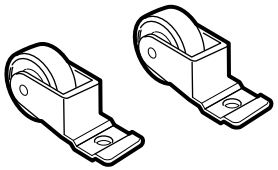
PNR.780-6160 EC-1200/1600 Mod. Rear Leg
unit: pieces



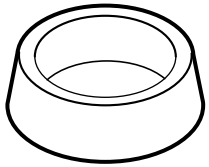
PNR.780-0140 EC-1200/1600 Leveler Set
unit: sets



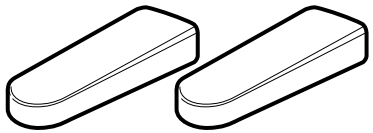
PNR.724-3950 EC-1200/1600 Levelling Knob
unit: pieces



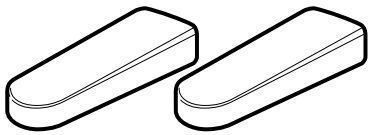
PNR.780-6180 EC-1200/1600 Caster Pipe Set
unit: sets



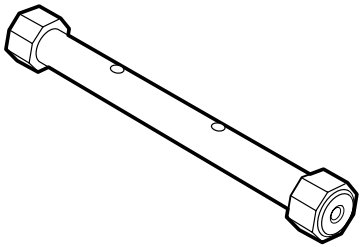
PNR.780-6550 EC-1600 Vibration-proof Rubber
unit: pieces



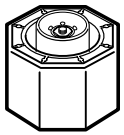
PNR.780-6445 EC-1200/1600 Front Leg with Cover Set
unit: sets



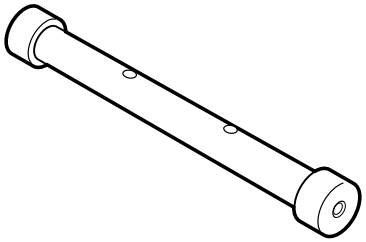
PNR.780-6446 EC-1200/1600 Front Leg with Cover Set
unit: sets



PNR.786-2409 EC-3600/3700 Rear Leg with Level Adjuster
unit: pieces

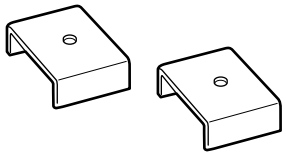


PNR.781-0140 EC-3600/3700 Leveler Set
unit: pieces

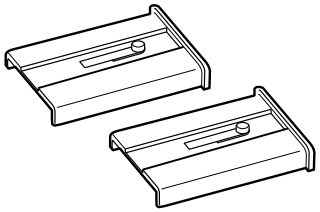


PNR.787-2409 EC-3600/3700 Caster Pipe Set
unit: pieces

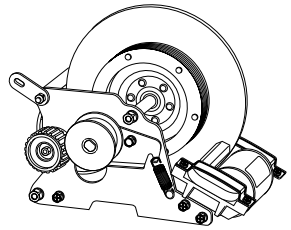
PNR.781-0150 EC-3600/3700 Caster Set
unit: pieces



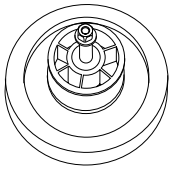
PNR.781-5030 EC-3600/3700 Pipe Spacer Set
unit: sets



PNR.781-5040 EC3600/3700 Rear Support Pipe Spacer Set
unit: sets

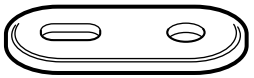


PNR.780-7050 EC-1200B Workload Unit
PNR.780-7060 EC-1600B Workload Unit(w/Flywheel)
PNR.781-5581 EC-3700B/3600B Workload Unit (w/Flywheel)
unit: pieces

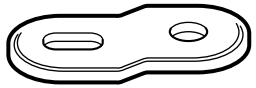


PNR.780-2240 Freewheel Set
unit: sets

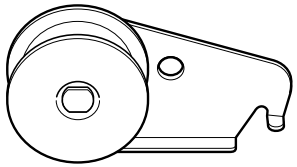
PNR.724-4802 Crank Cap
unit: sets



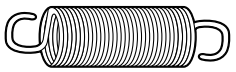
PNR.718-0450 EC-1200/1600 Workload Unit Reinforcing Metal Base
unit: pieces



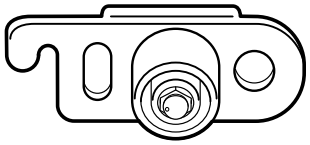
PNR.781-5580 EC-3600/3700 Workload Unit Reinforcing Metal Base
unit: pieces



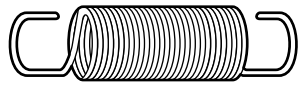
PNR.780-7030 Idler A Set
unit: sets



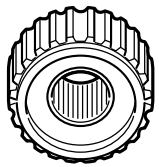
PNR.780-7040 Idler Spring A
unit: pieces



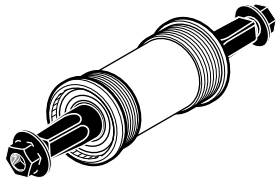
PNR.780-2220 Idler Set
unit: sets



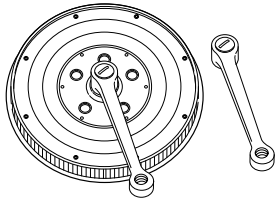
PNR.720-1110 Idler Spring
unit: pieces



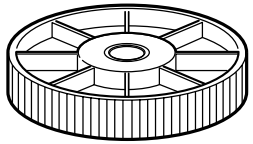
PNR.780-7010 Pulley 1-B
unit: pieces



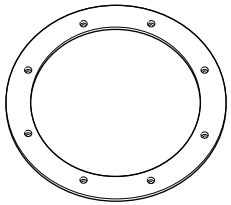
PNR.781-9200 Cartrige BB(YST-986A)
unit: sets



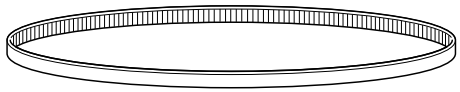
PNR.780-6990 Pulley 1-A Set
unit: sets



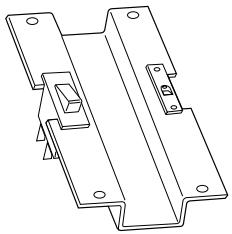
PNR.780-7020 Pulley 2-A Set
unit: pieces



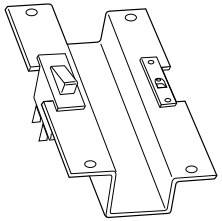
PNR.780-7000 Pulley Flange
unit: pieces



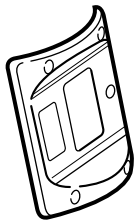
PNR.724-1021 EC-1600B/1200B Teethed Timing Belt (P8M15-1192)
PNR.724-1022 EC-3700B/3600B Teethed Timing Belt (P8M15-1080)
unit: pieces



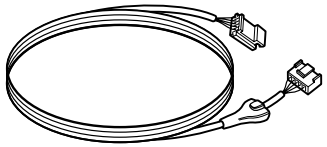
PNR.780-6240 EC-1200/1600 Inlet Metal Base
unit: sets



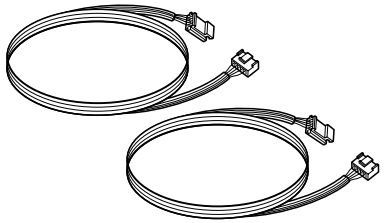
PNR.780-6241 EC-3600/3700 Inret Metal Base
unit: sets



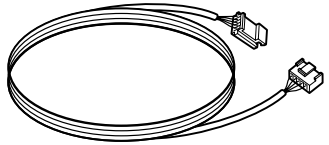
PNR.780-6030 EC-1200/1600 Inlet Cover
unit: sets



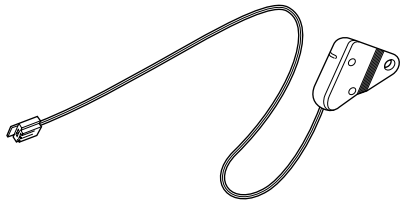
PNR.780-6220 EC-1200 5PCable
unit: sets



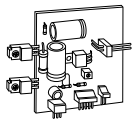
PNR.780-6480 EC-1600 5PCable (Upper)
PNR.780-6481 EC-1600 5PCable (Lower)
unit: sets



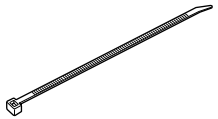
PNR.781-5550 EC-3600/3700 5PCable
unit: sets



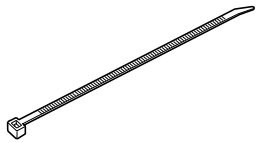
PNR.780-6241 CDC Sensor Set
unit: sets



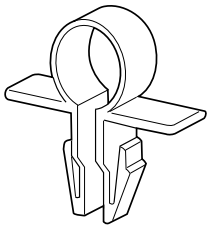
PNR.780-6210 Power Supply Board
unit: sets



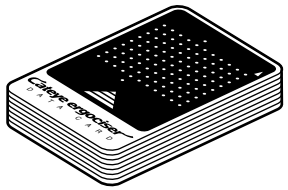
PNR.729-5010 Cable Clip Small (CV200)
unit: pieces



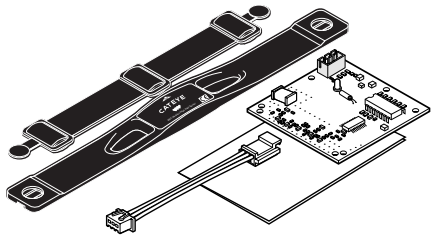
PNR.729-5025 Cable Clip Large (CV250)
unit: pieces



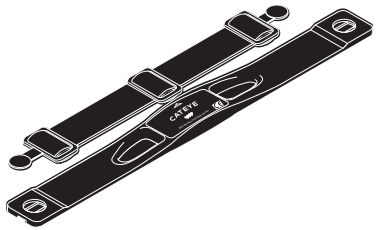
PNR.718-5140 EC-1200 Cable Holder
unit: pieces



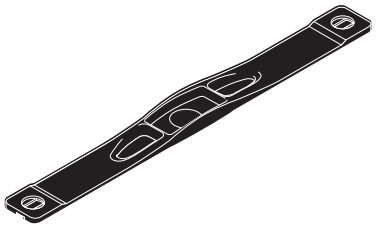
PNR.722-4950 Date Card
unit: sets



PNR.701-7002 Chest-belt & Pulse Sensor Kit (TM-1600)
unit: pieces

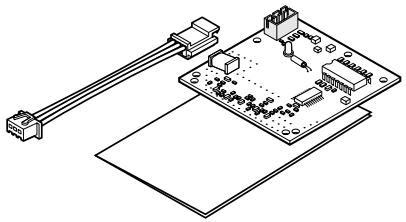


PNR.169-9806 Chest-belt Set
unit: pieces



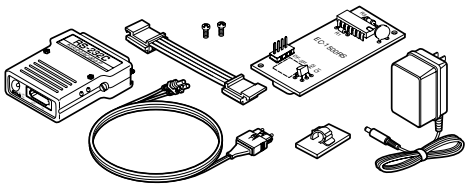
PNR.169-9826 Replacement Electrode Belt
unit: pieces

PNR.169-9816 Mounting Belt
unit: pieces

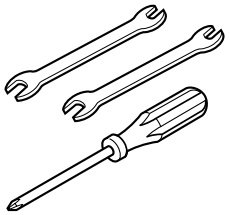


PNR.000-0000 Pulse Sensor Kit
unit: pieces

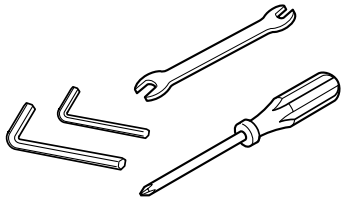
PNR.166-5150 Lithium Battery CR2032
unit: pieces



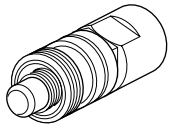
PNR.701-5700 RS232C Communication Kit (100V)
PNR.701-5701 RS232C Communication Kit (120V)
PNR.701-5703 RS232C Communication Kit (220V)
unit: sets



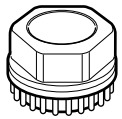
PNR.780-6350 EC-1200/1600/C400 Tool kit
unit: sets



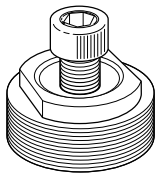
PNR.781-5180 EC-3600/3700/C400R Tool kit
unit: sets



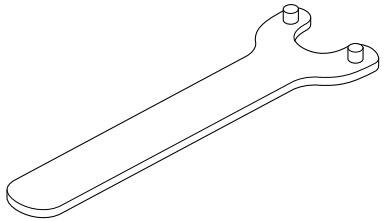
PNR.758-1000 Cotterless Gear Crank Removing/ Fastening Tool
unit: sets



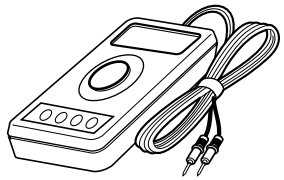
PNR.781-9210 Cartrige BB Removing Tool
unit: sets



PNR.758-1010 Freewheel Set Removing Tool
unit: sets



PNR.758-1080 Pin Face Wrench
unit: sets



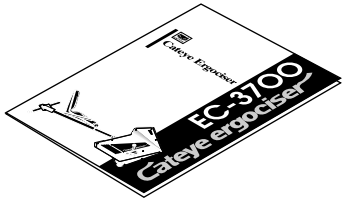
PNR.737-7000 Tester
unit: sets

PNR.747-8000 Coil Current Measuring Cable
unit: sets

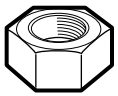
PNR.780-6110 EC-1200 Operating Instructions J
PNR.780-6111 EC-1200 Operating Instructions E
PNR.780-6112 EC-1200 Operating Instructions G
PNR.780-6113 EC-1200 Operating Instructions F
unit: sets

PNR.780-6510 EC-1600 Operating Instructions J
PNR.780-6511 EC-1600 Operating Instructions E
PNR.780-6512 EC-1600 Operating Instructions G
PNR.780-6513 EC-1600 Operating Instructions F
unit: sets

PNR.781-5700 EC-3600 Operating Instructions J
PNR.781-5701 EC-3600 Operating Instructions E
PNR.781-5702 EC-3600 Operating Instructions G
PNR.781-5703 EC-3600 Operating Instructions F
unit: sets

			
PNR.781-5990 EC-3700 Operating Instructions J PNR.781-5991 EC-3700 Operating Instructions E PNR.781-5992 EC-3700 Operating Instructions G PNR.781-5993 EC-3700 Operating Instructions F unit: sets	PNR.000-0000 EC-C400 Operating Instructions J PNR.080-6751 EC-C400 Operating Instructions E PNR.000-0000 EC-C400 Operating Instructions G PNR.000-0000 EC-C400 Operating Instructions F unit: sets	PNR.000-0000 EC-C400R Operating Instructions J PNR.080-6761 EC-C400R Operating Instructions E PNR.000-0000 EC-C400R Operating Instructions G PNR.000-0000 EC-C400R Operating Instructions F unit: sets	

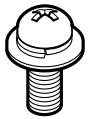
1



PNR.752-1085 Hexagon Nut M8-3
unit: pieces

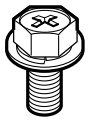
2

PNR.752-1063 Hexagon Nut M6-3
unit: pieces



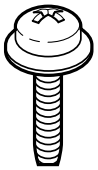
PNR.753-5410 Screw Set M6x12
unit: pieces

3



PNR.750-9616 Screw Set(+) M6x16
unit: pieces

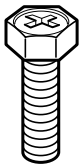
4



PNR.756-1412 Tapping Screw 4x12 with Washer
unit: pieces

5

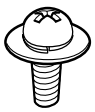
PNR.750-1390 Spacing Spring
unit: pieces



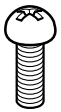
PNR.750-8616 Cross-recessed Head Hexagon Screw M6x16
unit: pieces

PNR.750-6810 Seat Post Adjust Screw M8x10
unit: pieces

6

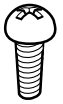


PNR.753-6412 Tapping Screw(2) 4x12C
unit: pieces

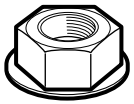


PNR.751-5330 Tapping Screw(2) 3x30
unit: pieces

PNR.751-5208 Tapping Screw(2) 2x8
unit: pieces



PNR.751-5206 Tapping Screw(2) 2x6
unit: pieces

7 			

PNR.752-5600 SW Nut M6
unit: pieces

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